COOKIA

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WHAT SNAIL IS THAT?

FIVE NIGHTS AT SEA

NELSON BUILDS AS NEW ZEALAND'S PREMIER TATEIDAE HOTSPOT

AFTER CYCLONE GABRIELLE; PAPAMOA BEACH WASHUPS

KAWAA CREEK AND MANGERE REVISITED

PHOTOGRAPHING SHELLS FOR THE PURPOSES OF IDENTIFICATION

A selection of Powelliphanta: New Zealand's most beautiful land snails
Photograph courtesy of Dr Kath Walker ONZM

Front cover: *Penion cuvierianus* (Powell, 1927)

Dredged live from 100m in vicinity of Aldermen Islands. Claire Elliot. June 2023

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Editorial

Last year, I made mention of Kerry Walton's long association with our Club and of his academic attainment. This year, there is more to celebrate: Kerry's appointment as Invertebrate Curator at the Museum of New Zealand Te Papa Tongarewa. This should maintain the very positive and mutually beneficial ties between Te Papa and the WSC that Dr Bruce Marshall and his predecessors, long encouraged.

On a less happy note, 2022/23 has been a year in which we lost some really solid members. Dr Alan Beu, late of GNS was one whose long association with the Club went back to 1957. Mary Agnes Wotton, supported by her husband, Fred, was an active stalwart for decades, as was Doreen Burr. These sad events, with implications for us all, are a fact of life in an ageing membership. However, of recent times, we have benefitted by the joining of young members, together with injections of new adults attracted by our various public activities. Both groups should be nurtured – perhaps with a "buddy" system where older members with time and energy can actively support new individuals. Think what **YOU** can do.

With this in mind, I do wish to endorse the contribution by Dr Ian Payton. His initiative as to what may be achieved by collective effort is both sound and timely.

The publication of *Cookia* continues strongly, but it would be much enhanced by contributions from a wider range of authors. If you haven't yet shared material, please do so. We are all winners from our combined inputs.

Pete Cresswell

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What snail is that?

The seemingly never-ending frustrations of a New Zealand snail collector

Dr Ian Payton

Beginnings

As a young teenager I went with my mother to Wellington Shell Club meetings which in the 1960s were held in the Board Room of what was then known as Dominion Museum, that grand stone building behind the Carillon on Buckle Street. Here Dr Dell (then Deputy Director) and others would discuss a different group of molluscs each month and illustrate their talks with specimens from the museum collection. I remember one evening asking Dr Dell about a *Paryphanta* (now *Powelliphanta*) specimen I'd been given, and him replying "You tell me where it came from, and I'll tell you what it is", and he was right because as new species/ subspecies were being discovered the professional taxonomists at Auckland and Wellington museums were describing them. These people were products of their time. Theirs was more a 'calling' than a job. They immersed themselves in their subjects and because career progression depended on publications the current state of knowledge was usually available for others to critique and build on.

At one of those meetings Dr Dell introduced me to John Marston. John taught at the Correspondence School which meant that his holidays coincided with mine, and over the next 10 years we 'chased' snails from North Cape to the Bluff. Then the inevitable happened. I finished my university training, got a job, married, and started to raise a family. We stayed in touch, and now I have his land snail collection to curate.

Changing times

In the late 1980s and early 1990s the New Zealand governments of the time completely rearranged their land managing departments and science agencies. The newly formed Department of Conservation was given responsibility for lands previously managed by the Lands & Survey Department and the New Zealand Forest Service for protection (as opposed to production) purposes. The government science departments were scrapped and replaced by a series of government-owned companies (Crown Research Institutes). Science funding was placed in a contestable pool which in those early years had to be competed for each year. That fundamentally changed the way science was done in New Zealand. It was now much more difficult for taxonomists (and others) to spend their working lives becoming the authority in their chosen field, except possibly if they worked in one of the major museums. Museums felt the winds of change in a different way. As molluscan staff retired or left for other reasons they weren't replaced, or if they were it was with invertebrate (as opposed to molluscan) curators.

The current situation

Microsnails (Achatinellidae, Charopidae, Helicarionidae, Helicodiscidae, Punctidae, Pupinidae)
The most recent published inventory of New Zealand's molluscan fauna (Spencer, Marshall and Willan 2009) lists 871 endemic land snail species (Figure 1). While some of these numbers are open to debate, the conclusion is not. The majority of New Zealand's endemic land snail fauna comes from two families of microsnails (Charopidae and Punctidae), and most of the species in these families have not been formally described. The vast majority of currently undescribed species have informal names (often referred to as 'tag names'). Tag names are frowned upon by many in the taxonomic fraternity, who would rather use numbers to refer to yet undescribed species. For example, Punctidae sp. 144 (in Spencer et al. 2009) was known as *Laoma 'ordishi'* for many years before its formal publication (Climo et al. 2019). The tag name tells me quite a lot about the species. The tag number doesn't.

Since the 1960s a small number of amateur taxonomists (some in conjunction with their more formally trained colleagues) have continued to describe new microsnail species. Key contributors have been Norman Gardner (1967, 1968, 1969, 1972, 1977), Jim Goulstone (1996, 1997, 2001), Goulstone & Fred Brook 1999), Goulstone & Pauline Mayhill (1998) and Climo & Goulstone (1993, 1995).

The husband-and-wife team of Frank Climo (former land snail taxonomist at what is now Te Papa) and Karin Mahlfeld, with the assistance of friend and colleague Dave Roscoe, have also persevered with their efforts to advance our understanding of species composition and distribution in the New Zealand microsnail fauna (Climo & Mahlfeld 2011, Climo et al. 2019). As part of this work Dave Roscoe has built up an archive of 8400 images of New Zealand microsnails and slugs (see Figs 2-6). Between them this trio has over 100 years of experience in the finer points of microsnail morphology and anatomy and has become the go-to group for those wanting to identify small land snail species. I'm pleased to be able to report that they currently have manuscripts on two further microsnail genera submitted or about to be submitted for publication.

Funding from the New Zealand government's contestable science pool has also allowed Bruce Marshall (Te Papa) and Gary Barker (Landcare Research) to revise several Charopid and Pupinid genera (Marshall and Barker, 2007, 2008).

Rhytidids (Rhytididae)
Spencer, Marshall & Willan (2009) list 10 rhytidid genera in their checklist of New Zealand living mollusca. The taxonomy of almost all of these is in a state of flux. That doesn't mean that these genera, which include some of the largest and most spectacular species of the indigenous land snail fauna, have been neglected. Rather it speaks to the fact that much of this work has never found its way into the peer-reviewed literature.

For most of her working life Kath Walker has beavered away on the genus ***Powelliphanta***, initially as a Wildlife Service employee, and since 1987 from within the Department of Conservation. The most recent Conservation status report (Walker et al. 2023) for *Powelliphanta* lists 70 taxa (species, subspecies, colour forms) within the genus, over 20 of which do not yet have formally published names, despite most having been recognised as discrete entities for many years. Since the days of Dr AWB Powell (Auckland Museum), who named 32 Paryphanta and Powelliphanta species/subspecies between 1930 and 1949, only two new species have been formally described (Climo, 1971; Walker et al., 2008). Genetic analysis shows one of these (*Powelliphanta fiordlandica*) requires a new genus. The other (*Powelliphanta augusta*) is the snail at the centre of the coal mining saga on the Stockton Plateau in northern Westland, which largely wiped out its natural habitat (Walker et al. 2008). The genetic relationships between *Powelliphanta* taxa have largely been teased out (see Walker, 2003, Appendix 2), but are yet to appear in the peer-reviewed literature. In Kath's defense the mandate of the organisations she has worked for is conservation and not taxonomic research. That said, I've waited 58 years for a comprehensive revision of this genus, and I can't afford to do that again.

Philip Parkinson's contribution to Rhytidid taxonomy was to show that the known subfossil forms of ***Rhytida*** were conspecific with living taxa, and in the process remove *R. spealea*, *R. yaldwini*, *R. hadfieldi* and *R.* (now *Amborhytida*) *duplicata vivens* from the New Zealand land snail fauna (Parkinson, 1971). Based on the Spencer et al. (2009) checklist there would appear to be undescribed species of ***Amborhytida***, ***Delos***, and ***Prolesophanta***. There are also distributional, morphological and genetic differences to be resolved within ***Paryphanta*** (Spencer et al. 2006).

In the late 1990s the Department of Conservation contracted Murray Efford (Landcare Research) to map the distributions of all living species of ***Wainuia*** and ***Rhytida***, assess their conservation status and identify any needs for urgent conservation management (Efford 1998). That report collated the existing information on these genera but did not lead to taxonomic changes. Efford et al. 2002 examined the phylogenetic relationships with *Wainuia*, concluded there were at least five distinct species, and recommended a full taxonomic revision of the genus. That task is being led by Fred Brook, and when completed it will add a number of new genera and species to this group of Rhytidids.

Leaf-veined slugs (Athoracophoridae) *and an* **amber snail** (Succineidae)
New Zealand's leaf-veined slugs belong to the family Athoracophoridae. Sixty-five taxa are listed in the latest conservation status report compiled for the Department of Conservation (Barker et al. 2021). Of these only 23 have been formally described. If that's not enough of a problem the key authority on this group (Gary Barker) has retired from Landcare Research and now lives in Australia. He's still actively engaged in molluscan research, but you can't easily send him specimens to identify, and for most of the species there are no published papers for you to consult. When I last talked to Gary about this, he suggested I send the specimens I wanted identified to him c/o the Museum of Victoria in Melbourne, where he is a Research Associate. Needless to say, I haven't got around to doing this, and the specimens remain unidentified.

Identifying amber snails is straightforward. They are quite distinctive, there is only one species (*Succinea archeyi*) and there are ample descriptions, drawings and photographs to assist identification.

Flax snails (Bothriembryontidae)
New Zealand has three recent species of flax snails. *Basileostylus bollonsi* occurs only on the Three Kings Islands and has 3 named subspecies. *Maoristylus ambagiosus,* which is confined to the Cape Maria van Dieman – North Cape block, has 15 named and several additional unnamed but morphologically distinguishable entities. *M. hongii*, which is found along the east coast of Northland as far south as Whangarei and on several adjacent offshore islands, has no recognised subspecies. There is no dispute over the number of species. However, when it comes to subspecific differentiation there are two distinct camps, those who argue that most of the existing subspecies are morphologically distinct and should be retained, and those who point to the lack of evidence for this in the genome (Buckley et al. 2001). Both groups agree on the need to conserve the remaining populations of these threatened species. As genetic analysis techniques evolve it will be interesting to see if these opposing views can be reconciled.

Naturalised slugs and snails
This is the only group of New Zealand's terrestrial molluscs for which there is a comprehensive account of the taxonomy, anatomy, and distribution. Gary Barker's volume on naturalised terrestrial Stylommatophora (Barker, 1999) provides descriptions of each of the species, line drawings and photographs, and an identification key. It would be an excellent template for the other groups of terrestrial molluscs.

What are the problems and what might we do about them?
The previous paragraphs haven't exactly painted a rosy picture of the state of New Zealand's land snail taxonomy. In the short (and probably longer) term throwing more money at the problem isn't a serious possibility. Despite the push in recent decades for more emphasis on indigenous biodiversity that hasn't translated into significantly more funding for taxonomic research, unless perchance that research has the potential for additional economic benefits.

So, what are the problems and how might we go about rectifying these?

1. There is a need to get the current plethora of unpublished material, some of which has been around for many years, into the public arena where it can be critiqued and built on.
2. Formally trained molluscan taxonomists are a rare breed these days. Those of us with an interest in our native land snails need to be doing all we can to support those who have the necessary taxonomic skills and the inclination to 'get it done'.

Don't know what you could do or who you could help? I can help with that!

3. Let's encourage the production of taxonomic keys. I did my botanical training at Otago University more years ago than I care to remember. Professor Geoff. Baylis taught the plant identification course. His mantra was "you don't need to know what it is, but you do need to know how to find out". And that requires a taxonomic key.
4. Let's ditch tag numbers. Tag names are far more informative.

As a first step I'd suggest we compile a comprehensive list of tag names and numbers for publication. That could be followed by taxonomic keys for recently revised genera such as Cytora and Allodiscus.

Don't believe any of this is possible? You'll never know unless you try.

Acknowledgements
Karin Mahlfeld reviewed the text of this article and put me straight on several points. David Roscoe provided the microsnail images.

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Family	Described		Undescribed	
	species	subspecies	species	subspecies
Achatinellidae	4	1		
Athoracophoridae	26		21	
Bothriembryonidae*	3	16		
Charopidae	212		167	
Helicarionidae	3			
Helicodiscidae	5			
Punctidae	85	4	259	
Pupillidae	1			
Rhytididae	36	12	15	
Succineidae	1			
*formerly Bulimulidae				
Total	376	33	462	0

Data from Spencer, Marshall & Willan (2009)

Figure 1. New Zealand's endemic land snail species

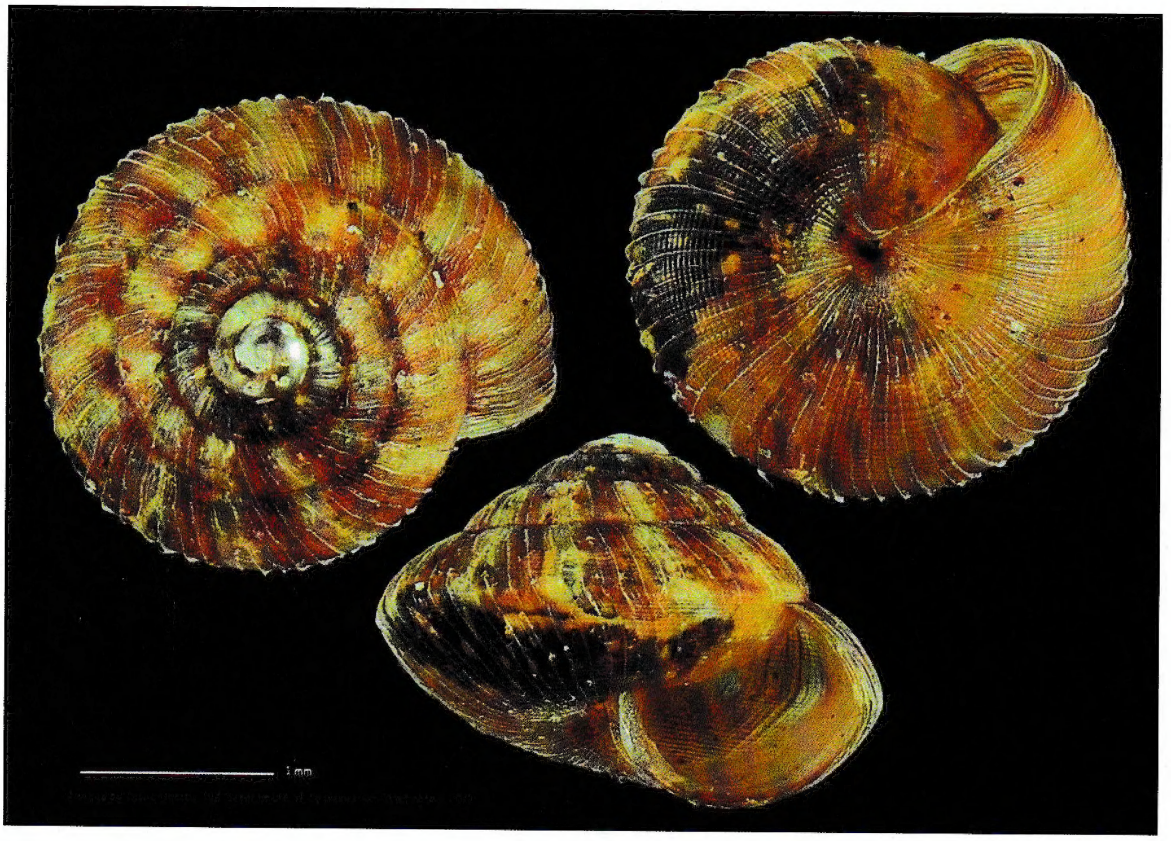


Figure 2. This undescribed species is known by the tag name "Laoma basrotunds" ms and the tag number Punctidae sp. 113. This specimen was collected by K. Mahlfeld in beech forest on Mt Stokes, Marlborough Sounds.

Figure 3. This undescribed species is known by the tag name "Calymna exquisite" ms and the tag number Charopidae sp. 38. This specimen was collected by T. Quinell in Whareorina Forest, west of Te Kuiti.

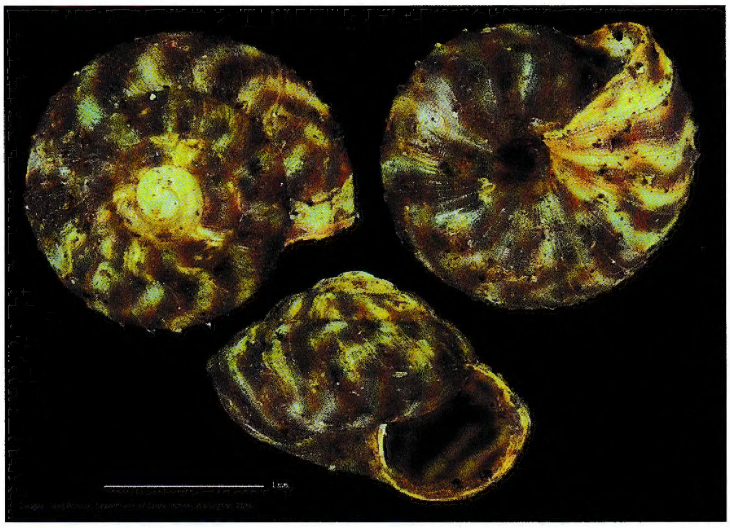


Figure 4. This undescribed species is known by the tag name "Laoma austrophrynia" ms and the tag number Punctidae sp. 109. This specimen was collected by K. Mahlfeld in Hinahina Forest, South Otago.

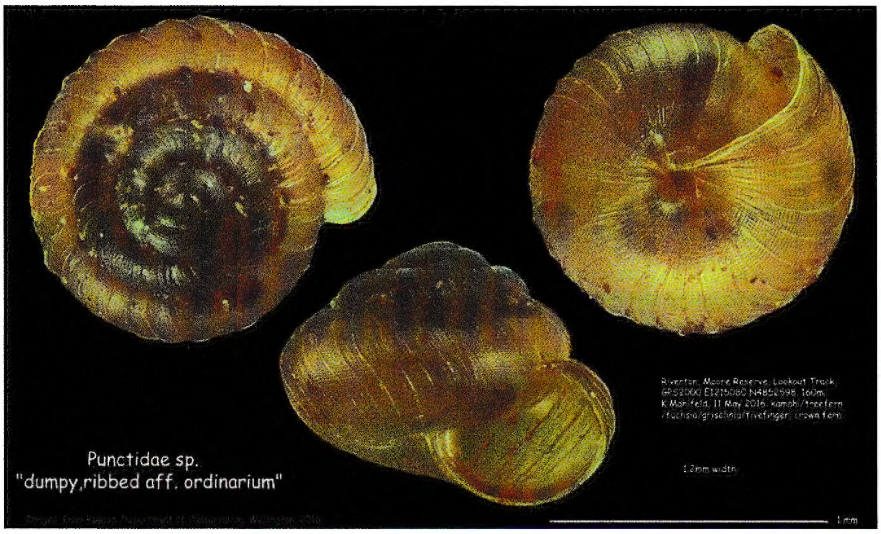


Figure 5. This undescribed species collected near Riverton in Southland has a tag name ("dumpy ribbed aff. ordinarium) but no tag number. It is similar to another undescribed species (Figure 6) that has both a tag name "(Punctum ordinarium)" ms and a tag number Punctidae sp. 81.

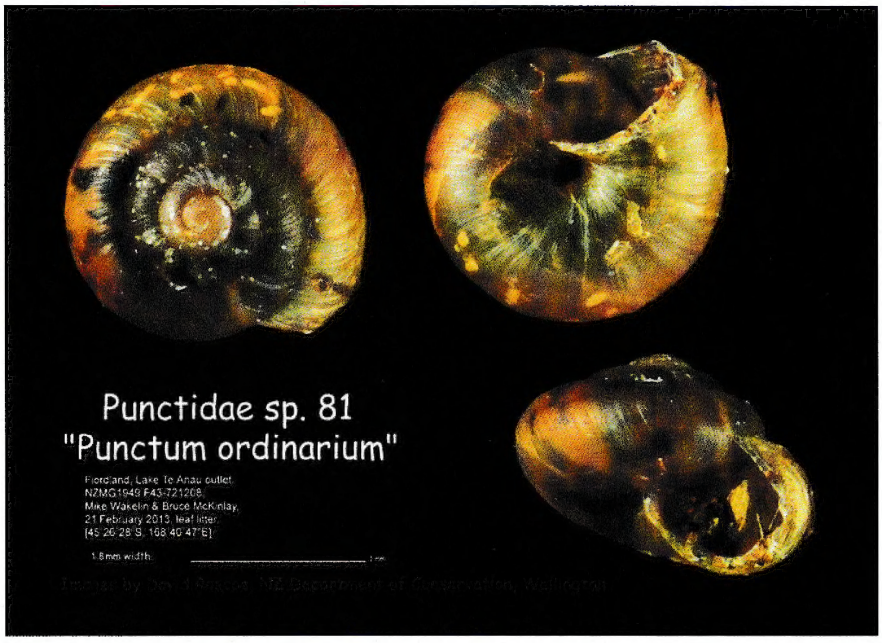


Figure 6. This undescribed species collected from Lake Te Anau, Fiordland, has both a tag number Punctidae sp. 81 and a tag name "(Punctum ordinarium)" ms. It is clearly distinguishable from the species illustrated in Figure 5 by the lack of ribs.

Searching for Tateidae in Northland

Kevin Burch

There are some among us who think chasing tateid habitats is an engaging activity. Pete Cresswell and a couple of others in the South Island have been having fun with these little (1.5 -2.5mm) beasts for a number of years. On the other hand, I, as a keen marine collector and diver, have been less so in the smaller non-marine material, although with an ongoing interest in terrestrial snails and the larger freshwater species. Recently getting involved in micro freshwater material was a new area of interest for me.

Worth mentioning is that collecting these little beasties, is quite different from normal methods. You can't actually see them *in situ* when checking moss and debris in seeps or trickles. It is not until material is washed and examined under magnification, or alternatively dried, that specimens appear. The first method, with specimens put into 98% ethanol, must be used if snails are required for DNA analyses.

Last April Pete and Dee Cresswell, Eric Scott and I retraced steps of our late friend Norman Gardner, who extensively worked on northern tateids in the 1960s and 70s. Pete and I began at the Reed Memorial Park in Whangarei and the associated Paranui waterfalls; only finding the ever-present *Potamopyrgus antipodarum* (Gray, 1843). Then to the Hatea River above Mair Park, finding *Zemelanopsis trifasciata* (Gray, 1843) and *Latia neritiodes* Gray, 1850. This was followed by the Tanekaha waterfalls track, behind Mangawhai, a few miles south of Whangarei. Several sites were sampled: one being "Gregs Grotto", which yielded two very small specimens of *Rakipoyrgus* cf. *gardneri* (Climo, 1974)[1] and one small *Ferrissia* spec.

***Rakipyrgus* cf *gardneri* (Climo, 1974) from "Gregs Grotto"**

Accompanied by Eric Scott, land snail aficionado as our guide, we visited Ruahuia Viaduct on Kirikopuni Rd, west of Whangarei. Many years ago, Eric and I collected small land snails there. After a tricky 40-odd metre descent to the stream we found a number of *Paxillostium nanum* Gardner,1970, several small terrestrial snails, the introduced *Cochlicopa lubrica* (Muller, 1774) and the ever-present *Potamopyrgus*.

***Paxillostium nanum* Gardner, 1970**

North to Twin Bridges where we collected samples of moss and leaves from a number of documented seeps. Years gone by this area was favoured by Norm Gardner.

A seep at the bottom of the Mangamuka Gorge
(35.204S; 173.503E)

Next, we sampled several roadside seeps north toward the Hokianga. We unsuccessfully combed the lower Mangamuka Gorge for a known soda spring but nevertheless, after more searching of various seeps and trickles and much cleaning I added up my finds to be:

19 specimens of *Ferrissia* sp
11 *Cochlicopa lubrica (O.F Műller, 1774)*
3 *Paxillostium nanum (Gardner, 1970)*
many *Vertigo ovata* Say, 1822
many *Potamopyrgus antipodarum* – but a very elongated form.
Amborhydita dunniae (Gray, 1840) – under roadside wandering jew.
Paryphanta busbyi (Gray,1840) – roadside grasses live, but left behind!)

Across on the ferry and south to Waiotemarama Waterfall walking track, which, in itself, is a really attractive area. A moss/leaves sample near the falls later yielded many *P. nanum,* a few more *V. ovata* together with a series of very small land snails. Extremely worthwhile.

The next day we searched the back roads for trickles near Whirinaki, south of the Hokianga Harbour. Only *P. antipodarum*. Disappointing.

Back to the Twin Bridges, where one previously missed seep yielded my first *Sororipyrgus raki* Haase, 2008.

***Sororipyrgus raki* Haase, 2008**

Despite searching a couple of trickles south of the Ruahuia Viaduct on the west of Kirikopuni Road, we found no more tateids.

I understand that there are in excess of 50 tateid species so far described in New Zealand, with many as yet undescribed. All adding up to lots of reasons to continue searching – and finding, our elusive tateid!

[1] In collection Pete Cresswell: # 23889

Five Nights at Sea

Claire Elliot

Thursday 1st June 2023, having just that morning negotiated a trip for a few days on a local trawler, I arrived at the wharf with great expectations. I had gotten to know the skipper, Dave, over the past few years and he had been very kind with some nice shells; although the rarest I've found off the trawler have been small specimens hidden amongst debris under nets or in mud stuck in the trawl doors when I got to search the boat after she tied up at the wharf.

Fishermen are almost always too busy to be bothered with these little shells, but I figured there might be a lot of interesting stuff coming up that goes un-noticed and the best way to get them would be to be on board as the net comes up.

Dave warned me that they don't really get many shells in the net or if they do it's nearly always the deep-sea whelk, *Penion cuvierianus* (Powell, 1927). However, I remained hopeful as many exciting specimens in shell books are described as being recovered by trawlers.

The boat was already fully fueled, iced, and had a lot of fish bins stacked all over her. I had to clamber over them to get to the cabin. Dave was throwing bags of groceries through the cabin window, and I put some of them away, at the same time getting familiar with the galley as I thought I could help later with a bit of cooking. It always pays to make yourself useful on commercial fishing boats and try not to get in the way. Ray, the one crewman, arrived and pronounced himself pleasantly surprised that I was along for the trip. This really put me at ease.

We left the wharf at 16:30 but stopped after only going a few hundred meters so the stabilizers could be deployed out either side. I asked Dave if they always had to be out and he said, "no but he doesn't want his tea to get spilled". Stabilizers certainly work to make a smoother ride, which I found out on the return trip up the bay in very different sea conditions!

That evening was fine and calm with a big moon rising out of the horizon. After storing all the supplies and chatting for a bit Dave set to work on the net. He decided to attach a slightly finer cod end net to the main net to increase the chances of getting some shells; this was very nice of him, and it took quite some time and an impressive display of knot craft, much like some giant macrame, to achieve. Meanwhile, the boat kept on chugging straight out past the Mercury Islands and into the dark. After a while Dave said we had better stop before we headed for South America. Then it was a quick dinner and an early bedtime. By this time, we were in 400 meters of water so no anchoring, just bobbing around out there all night. My bottom bunk bed was comfortable, but I couldn't sleep: the main motor was turned off, but a generator went 24/7 and with the water lapping the hull by

my head and that motor running, it felt like we were still moving and heading far out across the ocean - which was quite disconcerting. When I finally slept, I dreamed of running aground and the stabilizers getting stuck in rocks.

At 04:45 the alarm went off. I didn't get out of bed. When I finally emerged, the net had been deployed and the guys were in the cabin watching TV. I couldn't believe that they seemed to be enjoying "*Deadliest Catch.*"

The sea had come up overnight and was much rougher than forecast. Water rushed over the deck, and I found my boots that I'd left out had filled. I made breakfast for us all and, in the end, watched the fishing show on the TV as there was nothing else to do. I didn't realize that they towed for so long. We kept to a contour line at around 420 meters heading slowly south towards Mayor Island in the distance. The target species were ling and hoki and Dave explained the rules of how he had to catch one ton of mixed species before he could target and take three tons of snapper.

I got on well with Ray and we chatted a lot. He formed a genuine interest in the shells I showed him and my hopes of what might come up on this trip.

The mollymawk albatross arrived with the dawn and followed the boat all day, rising from the sea and flying ahead then waiting patiently for a feed.

Late afternoon, we were a few kilometers beyond the Aldermen Islands, and finally the net had to come up. It took ages to haul. The steel cable was wound on to giant hydraulic reels, but the guys had to manually guide the cable using rollers on levers so that it wound on evenly. This was incredibly physical work. Then the big steel doors smashed up into place and had to be attached. Lots of heavy chain and clanking about was involved. Then more cable and rope and finally the net which was wound on to the even bigger reel at the stern of the boat. A gnarled pale log was stuck in the net which elicited a lot of cursing as they couldn't get it out.

Next the cod-end of the net was pulled around to the side, hauled up and into the air by the crane. The bottom knot, another elaborate and impressive example of twisted rope, was easily pulled apart letting tons of deep-water fish - mostly ling and hoki, plus the log, spill out on to the deck.

The log – both cursed and prized!

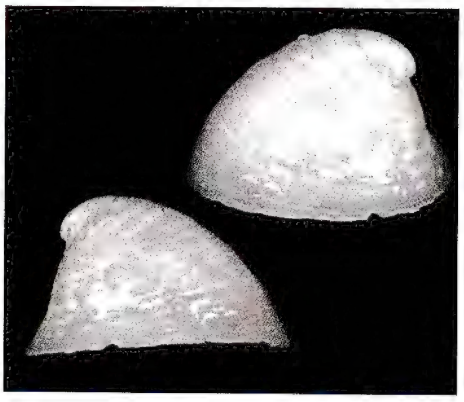
Circled: *Calagrassor aldermenensis* (Powell, 1971)

The log came out on top and when it was safe to approach, I had a look at the end closest to me. It was full of holes from Teredo- like shipworms. They are indeed a mollusc! Who knew?

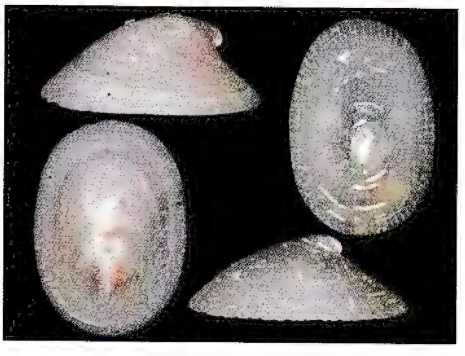
When all this was completed, it was dark and by the boat's bright deck lights I noticed what looked like the back end of a gastropod in one of the worm holes. Luckily, I had a pair of tweezers handy and managed to extract it quickly and get it into a tube with some ethanol as the guys were wanting to dump the log and start sorting the fish. When I declared my interest in the log, they moved it to another part of the deck so I could keep searching. I noticed that there were small, flat, pinkish limpets attached to the outside and some smaller, higher, white limpets within the cracks and holes of the log.

A closer look at shells *in situ* on the wood

***Xyloredo nooi* R.D. Turner, 1972**

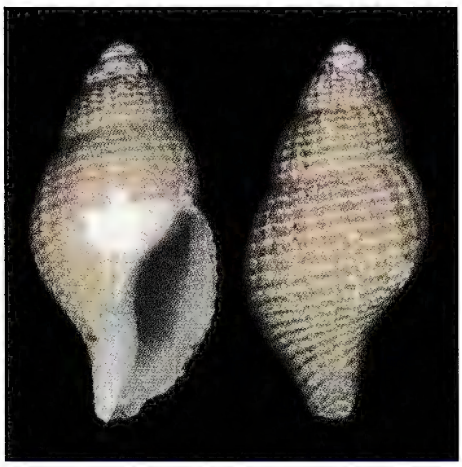


***Notocrater craticulatus* (Suter, 1908)**



***Coccopigya crebrilamina* B.A. Marshall, 1986**

I was excited about the first shell I had found as I had a bit of an idea of what it could be having seen it in New Zealand Seashells by Jennifer Raven and Selwyn Bracegirdle. When the description says found on wood around 400m and the type locality is Aldermen Islands it was a no brainer that I had probably found a *Calagrassor aldermenensis* (Powell, 1971)!



The one and only, *Calagrassor aldernenensis* (Powell, 1971)!

I was on hands and knees on a wet and heaving deck with a torch trying to find more but, alas, that was the only one, I suppose they are not referred to as rare for nothing.

I took a few limpets off and into ethanol and then put some of the broken bits of log into bags to take home. This was a good start, and I turned my attention to the fish, helping sort and load while keeping an eye out. I quickly realized that there were only fish on the deck with that haul and no shells or other bottom material had come up.

The mollymawks finally got the feed they had been waiting for when lots of small by-catch fish were thrown over the side.

As the fish were sorted the boat was on auto pilot heading for the shelter of the Aldermen Islands where we anchored for the night. We had scampi for a starter and ate like kings. I slept like a log.

Next morning when I arose the Aldermens were far to the stern and the net had been down for a while at 100 or so meters. Still an interesting depth as I have not sampled any material from this depth before. Dave pointed out a huge royal albatross that was dwarfing the mollymawks beside the boat.

The target species was snapper and when the net came up there certainly were plenty of them plus trevally and john dory. Also in the net were a few nice, big *Penion cuvierianus.* I grabbed them quickly before they broke as a large kingfish was thrashing about amongst the catch.

The rest of the day was much the same, lots of fish, but no shells but a little bit of mud caught in one trawl door which I collected. I asked Dave where we were going to anchor up and he said since the weather had improved, we were going to "turn and burn" and keep trawling all night. I thought he was joking but he wasn't. By now the whole fishing process had begun with each successive catch being sorted then stored in big bins of 'slurry' -watery ice - for a few hours and then packed into different bins with ice, to go into the hold. Then the slurry bins got washed out and re-iced, the first sorting bins washed, and the deck cleaned down. Any big fish like rig were processed at this stage. It's a lot of work and there is not much down time for the crew. I got up for the 2am haul and threw fish into bins for an hour or so before collecting a little more mud. I left them to it. Dave came in to sleep; Ray stayed up trawling. They swapped over at about 7am but Ray only got about an hour's sleep before the morning haul.

The next two days were much the same, but since the weather was picking up we spent the night in a sheltered cove. When I got confirmation that the shell I had found was very rare, Ray was excited for me. I got a fist bump! From then on, very few more shells or bits of bottom material came up and at the same time, the weather deteriorated. There was a wind and thunderstorm warning issued and we could see the mainland getting hammered. It got dark and we were well offshore with the net out as the lightning started to flash and the swell picked up from the southeast. Dave did a big sweeping turn and towed back towards port, stopping well out to bring the net up. The sea was all white water by now and the decision to pull the net straight up with the net hauler on to the back of the boat was clearly a smart one. It was too wild even to sort any of the catch. Luckily, the load was small. I heard Ray mutter that it was "real Deadliest Catch" at one point.

I stood up in the cabin with Dave as we surfed into the bay. It was very dark, which was just as well as I couldn't see the waves coming. At one point Dave opened his window, looked back, and said '' Look at this big #@**# coming" referring to the wall of water approaching broadside. It was quite exciting. We spent the night close to port in the lee of the land and, after sorting the fish, cruised into the wharf late morning. With the stabilizers lifted there was a noticeable roll to the boat as the swell picked up in the shallow bay.

My giant log was craned on to the wharf and just managed to fit into the back of our ute.

I spent the next few days picking off limpets and washing the smaller pieces of wood that had broken off, over a sieve. This material was dried in the sun and then scrapped onto a tray that could fit under my microscope. I identified two different micro shells as well as the two limpets and the ship worms from the 400m wood. The five liters of mud were washed through a sieve without finding any more shells.

Top: *Xyloskenea consors*
B.A. Marshall, 1988
Lower: *Bathyxylophila excensa*
B.A. Marshall, 1988.
Both recovered from the wood.

The reality of what I came home with, versus what I expected to find, was quite different. But that's what makes these trips so interesting. I never expected to have a log from 400m to examine and split apart. The shells found were totally new to my collection. It was great to be at sea and have this experience.

Acknowledgement:
I thank Kerry Walton, Invertebrate Curator at Museum of New Zealand, Te Papa Tongarewa, Wellington, for identifying the molluscs obtained on this trip.

Reference:
Raven, Jenny & Bracegirdle, Selwyn: 2020 *New Zealand Seashells* Wellington, ISBN 978-0-473-518711-4

Finding a sinistral *Amalda australis* on Tahunanui Beach, Nelson

Bert van Tiggele

As shell collectors, we know that most of the gastropod species in nature are of dextral (right-handed) coiling. In fact, more than 90% of all the 70,000 gastropod species in the world are so coiled.

In February of this year I was surprised to find a sinistral (left turning) form of the normal dextral *Amalda australis* (G.B. Sowerby I, 1830) at Nelson's Tahunanui Beach.

***Amalda australis*, sinistral and dextral forms, Tahunanui Beach**

This was a remarkable find. I informed Kerry Walton, then newly appointed Invertebrate Curator, at Te Papa, Wellington, about this shell. He advised me to register my finding in the list of NZ sinistral shells, held by the Auckland Shell Club. This list contains the particulars of some 125 sinistral shells found in New Zealand and is probably still incomplete.

To my surprise, the list contained only one sinistral *Amalda australis*, found at Pakawau, Golden Bay, by our Kaikoura club member, Bev Elliot.

***Amalda australis*, found by Bev Elliot**

The reason why sometimes sinistral gastropods occur in dextral populations was not understood until quite recently, when research was conducted under strict laboratory conditions, involving the freshwater gastropod *Lymnaea stagnalis* (Linnaeus, 1858).

This showed that the development of a cutting method in DNA for molluscs, made it possible to introduce a long-sought gene for snail dextral/sinistral coiling of the cells in the early stages of development of the shell. However, more of this kind of research is needed for a more complete understanding of this process.

There are a lot of shell collectors in the world, who are very interested in sinistral shells and sometimes they also like to pay a lot of money for these so-called "freak" shells.

Most sinistral "freak" shells belong to the order gastropoda (the "new gastropods"), in particular, the families Olividae, Marginellidae and Volutidae.

I do urge club members who have, or know of others who have, sinistral findings, to register with the Auckland Club register, so we may have a clearer overview of this phenomenon in New Zealand.

My sinistral specimen of *Amalda australis* will stay in my collection and later in life, I will donate it to the Museum of New Zealand Te Papa Tongarewa, Wellington.

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Auckland Shell Club Web Site. http:// www.aucklandshellclub.net.nz (See: Register of largest NZ shell/sinistral)
Kuroda R, Endo B, Abe M, Shimizu M. Chiral blastomere arrangement dictates zygotic left-right asymmetry pathway in snails. Nature. 2009 Dec;462(7274):790-794. DOI: 10.1038/nature08597. PMID: 19940849.
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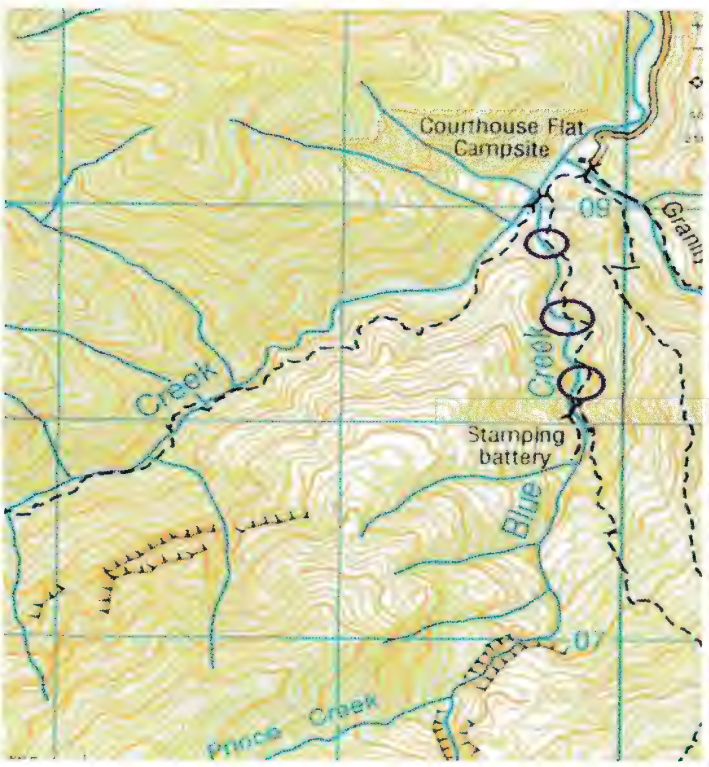
From top left to bottom right: *Agaronia gibbosa, Ancilla cinnamomea, Hexaplex cichoreum, Amoria undulata, Bullata bullata, Volvarina warrenii, Turbinella regina, Cypraeovula capensis, Marginella sebastiani, Cymbiola vespertilio, Cryptospira elegans, Marginella ornata, Cinctura hunteria, Melo melo*. Shells are not to scale. (Images courtesy of Harry Lee and Bill Frank)

Nelson Builds as New Zealand's Premier Tateidae Hotspot

Pete Cresswell and Andrew Spurgeon

A recent walk to a long-abandoned gold mining venture near the Blue Creek resurgence in Tapawera, Nelson, resulted in a very pleasant outcome: encountering a number of freshwater seepages emanating from the bank beside the track and eventually finding tateids in the moss and leafy debris sampled. Of considerable interest also, was the finding of two distinctively different tateid species immediately below the resurgence.

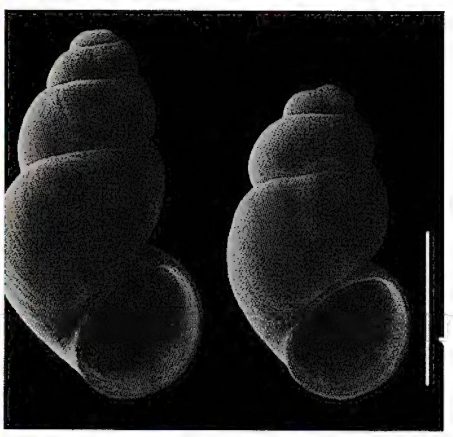
Relative geographic localities:
Kaituna, type locality for *Opacuincola lisannea.*
Cobb Valley, the type locality for *O. gretathunbergae.*
Blue Creek – the area of new tateid findings



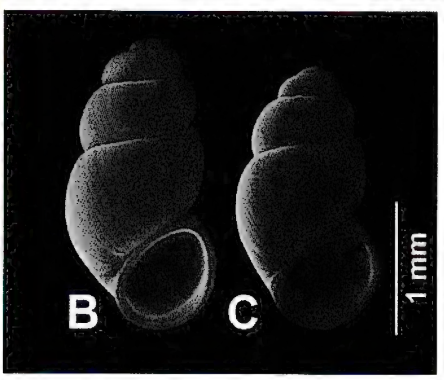
Blue Creek Track – sampling sites, starting at top

Starting at Courthouse Flat, the easy track runs south for some 400m before encountering the first of three obvious seepages on the left-hand side flowing from low banks on to the track verge. The first, at 41.472507; 172.566488, turned out to be the richest, with many snails in the moss and debris between the track and the bank. Some 12 live taken, were preserved in 98% ethanol and, together with a comparable number of dry specimens, sent to Te Papa[1]. The second seepage at 41.474465; 172.566919, yielded only a few snails, seemingly of the same species. The third seepage, at 41.477376; 172.567171, while looking promising with plenty of moss, was bereft of tateids.

Representative specimens from Blue Creek trackside sampling



***Opacuincola gretathunbergae*[2] from the type locality: Cobb Dam Road, Kahurangi National Park, Nelson.**



***Opacuincola lisannea*, from the type locality: Kaituna Track, Kahurangi National Park SW of Collingwood,**

The first sampling site, at 41.472507; 172.566488

The second at 41.474465; 172.566919

At the resurgence itself, the water volume prevented more than a gathering of a little moss from submerged stones together with a very small sand/light gravel sample from the water flow. This yielded a small series of exceedingly small tateids which are likely to be of an undescribed species.

Specimens almost certainly discharged from the resurgence

Tangled in a clump of moss immediately below the outfall was a single tateid of what appeared to be a second species: being 2.5mm in height, slenderer, with shallower sutures and a larger protoconch[3]. Again, almost certainly discharged from the resurgence. Neither of these species are the same as those (or, that) found in seepages down-stream.

The single specimen from the resurgence outflow

A further two specimens of Tateidae were collected from multi-species leaf litter on the bank about 250m downstream from the resurgence[4]. These were well above the ditch alongside the track and could not be from this source. They are not dissimilar to the specimens collected from the other seepages and are indicative of a more widely dispersed habitat.

The two specimens from litter on the trackside bank

With the snails from the trackside seepages indicating to be either *O lisannea* Verhaegen & Haase, 2021 or *O gretathunbergae* Verhaegen & Haase, 2021; or a species with affinities to one of them, does seem to raise some questions – which are likely to be resolved only with anatomical and DNA analysis. Even so, these populations are a significantly long way from the type localities of both. The Kaituna Track is about 100km as the crow flies at the opposite side of the Arthur Range and Aorere Valley and the Cobb Valley about midway. Certainly, other than the ubiquitous *Potamopyrgus antipodarum* (Gray, 1843), there are some reportedly widespread Tateidae species of other genera; *Obtusopyrgus alpinus* Haase, 2008, is a good example being recorded from Hanmer in north Canterbury to Hororata in mid-Canterbury[5].

Even so, we are unaware of these populations being critically examined using DNA analysis and may speculate that we could have a situation in Nelson (and elsewhere) where morphostatic evolution[6] is occurring. Hofman et al. 2022, conclude that results of a raft of earlier studies, where species were not necessarily differentiated morphologically, later DNA studies show numbers of more or less cryptic species to be genetically distinct but morphologically indistinguishable (*ibid* 2022).

All this might be of little interest to some, but there may be implications for the identification and retention of narrow range species where they are under threat from habitat destruction. In a paper reflecting on the global decline of non-marine molluscs, Lydeard and others declared that non-marine molluscan hotspots need to be identified in order to improve or modify management practices (2004:327). That Nelson is such a hotspot is amply verified by the sheer number of identified species compared to other New Zealand regions. Colleagues and we have found up to six unidentified species of Tateidae in the Cobb Valley, where only one, *Opacuincola gretathunbergae* Verhaegen & Haase, 2021, has been described. So far, the undescribed material appears to be restricted to this extremely narrow range location and habitats, which by definition makes it vulnerable.

Haase and Zielske discovered new tateid species in New Caledonia. (Haase & Zielske 2015:1). All are morphologically cryptic, indistinguishable from known species and determined only by a combination of anatomical and genetic data. They regard all as critically endangered on the basis of habitat changes and fragmented distributions.

Precisely the same situation could be applicable in New Zealand. The only way to determine the vulnerability of our Tateidae fauna is to identify species and map their ranges. This is the work of professionals. Citizen scientists, i.e., we, can help by increased sampling and reporting.

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Acknowledgement:
The photographing of specimens by co-author, Andrew Spurgeon is acknowledged. We also acknowledge the content scrutiny and helpful suggestions by Bert van Tiggele.

[1] These have been placed in the museum's collection. An equivalent dry preserved series is in collections PLC (register number 23918) and collection AS (AS.07806).

[2] Both of these *Opacuincola* photographs are from Verhaegen and Haase, 2021 – referenced herewith.

[3] Register # 23606 in collection PLC.

[4] Both are in the collection AS: cat. # AS.07814

[5] The records from many of these widespread localities have not yet been verified by appropriate DNA analyses.

[6] Morphostatic evolution, as defined by Davis (1993), is often a result of non-adaptive radiation marked by the rapid proliferation of species without ecological differentiation. This results in a flock of species that are not necessarily differentiated morphologically.

Club Trip to Golden Bay

Jenny Raven

Early on Friday 23 September 2022 five Wellington Shell Club members set off from Nelson to Golden Bay to visit club members in the area and explore the coastline. The five comprised Jenny Raven, Tony Tomlin, Margaret Elliot, Alison Druce, and Kevin Mead. Kevin kindly providing our transport.

Our first call was Rabbit Island. This long sandy beach had many bivalves washed in including *Gari lineolata, Hiatula nitida* (more brightly purple coloured than we are used to on the Kapiti coast, *H. siliquens* and hundreds of *Struthiolaria papulosa.*

At Motueka the group met up with Pete Cresswell, Andrew Spurgeon and Kathy and Les Carson. Pete's vast collection of all classes of molluscs was given an all too quick look before plans were made for meeting up the next day.

Accommodation was at the Pohara Top 10 where we linked up with Christchurch members, Jim and Leigh Crossland and set off to visit and share a meal with Heather Smith, a few minutes' drive away. This provided us with a very interesting garden visit with its own karst topography, a few drinks and even the playing of a piano.

Next morning with Pete, Andrew Spurgeon, and Bert van Tiggele joining the party we set off for the Kaituna River forks track where the freshwater enthusiasts amongst us found a special spot to look at the local fauna. Litter viewed later under the microscope revealed two members of the Tateidae family.

After coffee at the old Bainham store, we set off for Onekaka Beach where coloured rocks were the main items of interest sitting amidst the forlorn remains of the old wharf.

Then on to the beach at Paton's Rock for the low tide; the weather by then was

Searching debris in water table for tateids

beautifully sunny and there were many shells to look at and a reef to explore. Several large green mussels exposed by the tide made their way back with us for another shared meal along with a rugby test to watch.

Sunday saw the Pohara group head to Farewell Spit where we walked to Fossil Point at the southwestern end of the ocean beach. The beach was empty of

The old general store at Bainham

shells but there were fossils and rocks of interest. Kevin dug out a nice whole gastropod and back at the carpark we were in time to see the Farewell Spit tourist bus depart. Re-joined by Andrew and Pete and Dee we took the west coast road down to Paturau and into a farm Pete had arranged access to. We passed farmland, a huge sand dune and then out on to the open coast – with magnificent scenery – huge limestone cliffs looked down on us while the rocks on the shore were carved into strange shapes and covered in bright green weed.

In between these were hundreds of rounded, grey boulders. Shells of note were large *Dicathais orbita*, blue and green mussels, coloured *Cellana radians and Paratrophon*. Some took seaweed washings to check for small shells later. We returned late, happy, and tired.

On Monday we visited the Labyrinth Rocks and the lookout above Pohara; both located within spectacular karst topography with tall, narrow rock clefts and overhangs. Many photos were taken.

Patarau Beach

Rock formations near Patarau Beach

After lunch we visited Ligar and Tata beaches but only pipis and *Corbula* were noted. We then moved on to Rototai Beach. Here as with all the coastline from Pohara to Farewell Spit, the tide goes out miles leaving vast areas of mud and sand. At first the tide line looked disappointing with cockles and mussels, then as we walked along to a small spit and estuary, lots of *Gari lineolata* were washed in – it was great to see the abundance of these after they have largely disappeared from the Kapiti coast. Old *Powelliphanta* shells along with the Mactras - *Resania* and *Zenatia*, were also washed in. There were more shells stuck in the mud at the estuary – including white bubble shells and Jenny found a lovely *Bassina yatei* with orange/pink staining, preserved in the mud. A farewell dinner was again held at Heather's.

Next morning, we were all on our way. The Wellington contingent had a stop and last look at Pete's collection, then Kina Beach where rocks and *Cookia sulcata* abounded; into Nelson to say a quick hello to long standing member, Doreen Burr, and then a wind-up visit to Bert van Tiggele and his collection. Lastly, it was farewell to Kevin Mead at the airport. A wonderful trip.

Club Activities

Pat Lakeman

On Saturday 11 March 2023, club members put out some amazing displays of shells at an open day at the Collective Community Hub in Johnsonville, Wellington. The event was open to the public, at no charge, thanks to the free community space provided, along with some splendid advertising signs, by Collective First National Real Estate.

Displays included a pattern range of tiny Morning Star (*Tawera spissa*) shells washed up on just one day at Eastbourne, the world-wide relatives of New Zealand's famous paua (*Haliotis iris*), shells which also feature on postage stamps, striped shells, and shells of nearly every bright colour you can think of.

Below: Haliotidae: our paua and their relatives

Striped shells

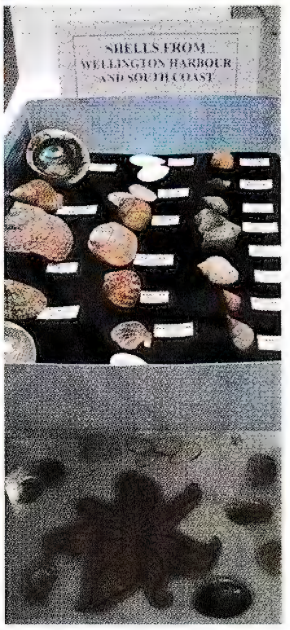
Colourful shells

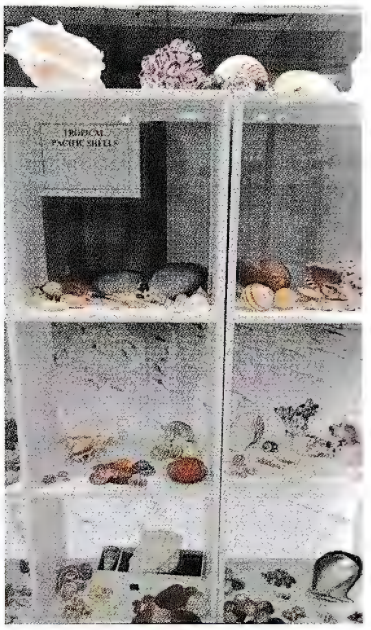
It was great to have Selwyn Bracegirdle visit from Papamoa to support the event, and he brought an item of particular interest – a photographic record of shell washups on Papamoa Beach, 15 February to 1 March 2023, as a result of Cyclone Gabrielle.

Members of the Wellington Shell Club were present to chat to visitors about shells and Club activities. One Club member who joined at the age of 5 (quite a while ago now), Kerry Walton, was also on hand to discuss and help identify shells that various members of the public brought along. Kerry has recently been appointed Curator of Invertebrates at Museum of New Zealand Te Papa Tongarewa, and his presence was particularly appreciated by one visitor – John Taylor from Pitlessie, Scotland. John is a member of the Mineral Club of Hutt Valley and Wellington and had been visiting New Zealand to see family and friends, and also to explore and collect rocks, minerals and fossils. Kerry was able to identify many of John's finds.

The day was very successful, with a good flow of people through the door. There were shell sales and free shell gifts for children, as well as the displays to look at. The Club gained some new members, and a lot of interest and appreciation was expressed by visitors. Many thanks are due to those who helped make it possible - bringing exhibits, arranging advertising and publicity, setting up the venue, looking after the tables, chatting to the public and packing up afterwards. We all revived wonderfully when Judy Hardie turned up with a basket of freshly baked scones. Later, several of us shared our experiences of the day over a meal at a local pub.

Later, in July, the Club took another opportunity to gain some publicity when the management of Johnsonville Mall offered an empty shop window, during the school holidays, as part of a "sea theme" display. Once again, good work by Club members resulted in an eye-catching presentation of both locally sourced shells and shells from around the world. **Below: Displays at Johnsonville Mall**





After Cyclone Gabrielle: Papamoa Beach Washups

Selwyn Bracegirdle

Cyclone Gabrielle hit the North Island of New Zealand from 12 to 16 February 2023. It was the deadliest cyclone to reach New Zealand since Cyclone Giselle in 1968 and worse than Cyclone Bola in 1988. At least 11 people were killed. There was huge damage to homes and businesses, particularly agricultural. The financial cost to be measured in the billions.

For the Bay of Plenty, notably Papamoa Beach, the storm brought strong wet easterlies along the coastline, which churned channels along the shallows, but no significant impact to the beaches along high tide or above. By 15 February the weather had settled in the Bay, while the cyclone pushed devastatingly further south down the East Coast.

On the morning of the 15th, we ventured to the beach. You could see the sea was dirty in colour but possibly only as far as five hundred metres out from the beach. On the beach we discovered huge patches of exposed shells.

Early on the 15th – a first glimpse of the washup

All in the family, Mactridae were the bivalves: *Resania lanceolata* , *Zenatia acinaces* (numerous specimens collected of these two species), *Spisula murchisoni* mixed with some *Spisula discors*. There were also numerous live *Struthiolaria papulosa*. and over a few days the washups dispersed leaving the dead and empty shells at high tide and the survivors maybe returned to the surf. For the following couple of weeks, the deposits of shell material were well worth scrutiny.

On the morning of the 16th

On the morning of the 17th

The rarest of the finds was a specimen of *Tonna cumingii* (52mm) with some of its protoconch missing and plain patterned surface. Rare to find in New Zealand and particularly for Papamoa Beach.

Nearby was a *Tonna tankervillii* (85mm). Cymatiidae also featured: *Cabestana spengleri* and *Monoplex parthenopium*, while *Argobuccinum pustulosum* and *Monoplex exaratus* remained elusive with only broken pieces of shell visible. Nice clean specimens of *Ranella australasia* were found.

Zenatia acinaces* & *Resania lanceolata

The number and variety of finds were sufficient to produce a small display of specimens found in the aftermath of the cyclone

***Tonna cumingii* (Reeve, 1849)**

Other finds included *Semicassis labiata*, *Alcithoe arabica*, *Penion sulcatus*, *Maurea selecta* (not often found here), *Nerita melanotragus* (20mm), *Tanea zelandica* (25mm), *Maoricrypta costata* (up to 44mm - there are bigger around this location) and *Amalda australis*. Among the bivalves *Panopea zelandica* (nice to find a pair at 85mm – although there are sometimes huge single valves of this species washed up on this coast), *Myadora striata* (45mm), *Solemya parkinsonii* (unusual for this location), *Bassina yatei* and *Tawera spissa* along with other species.

It seems the shellfish communities have survived the cyclone experience but were also able to yield enough material to excite local collectors.

Living in Russell

Jenny Raven

In winter 2022 I was able to spend several weeks in Russell. Just before my arrival, there had been some very strong winds from the northeast and although some beaches were scoured clean, for the first time I found shell washups in areas I had not found washups before. I therefore learnt some interesting lessons: these being:

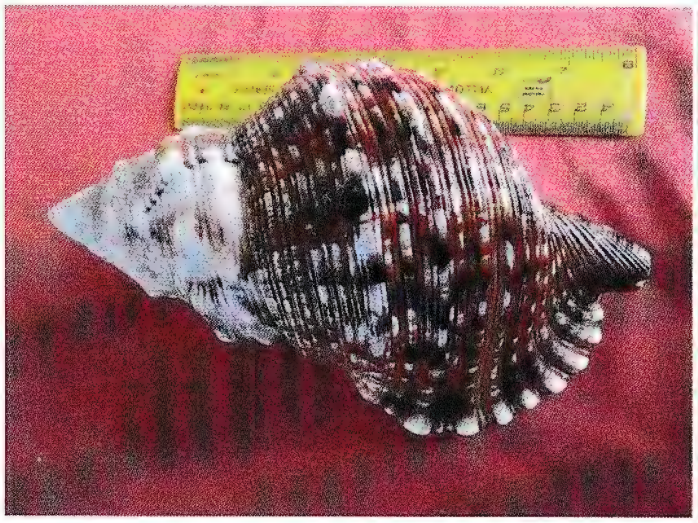
1 Don't give up on areas where you have not found shells previously. Both sides of Tapeka Point are usually bare of shells but literature has recorded some interesting finds there in the past. This time there was good shell sand with *Philippia lutea* being common and *Coelotrochus carmesinus* and *Williamia radiata nutata* amongst it. Similarly, previously bare rocky beaches at Rawhiti had shell sand containing *Philippia* and *Nassarius spiratus.*

2 Continue to check pools and gravel patches in areas that previously didn't look promising. The main beach at Matauri Bay occasionally has washups but the rocks and reef at the south end are usually bare. I spent some time peering into them all and was rewarded by a dead *Agnewia tritoniformis* in one. Also, a pool in an otherwise empty reef near Rawhiti had an amazing *Glaphyrina plicata* washed into it and a *Tonna cumingii* and large *Mammilla simiae* were perched up high on a gravel beach at the back.

3 Shells sometimes wash up in unlikely spots. The middle of Long Beach, Russell, is invariably bereft of shells. After one long walk and a coffee from the coffee cart at the northern end, I retreated to the dunes to relax and enjoy the sun. On waking up I looked out at the Islands to see what seemed like the shape of a triton shell at the water's edge. Indeed, it was – a large *Charonia lampas* just washing in with nothing else anywhere along the beach. On another occasion I walked across mud and cockle beaches at the mouth of the Kerikeri Inlet without finding anything of interest. However, on returning to the start, a large, clean, *Hydatina physis* had washed into my earlier footsteps, just waiting to be picked up.

4 Beaches can change by the week. One week, at Taupiri Bay, the only shell of note was *Agnewia tritoniformis.* The following week it was replaced by a nice *Notocochlis cernica.* Such surprises are not so rare!

Contrary to the above however, I must admit that walks in the same areas in early 2023 resulted in no finds at all. I therefore conclude the Bay of Islands area is not an easy area to collect shells in; finds are sporadic but can be very good and satisfying when they do occur.



***Charonia lampas* (Linne, 1758)**

***Notocochlis cernica* (Jousseaume, 1874)**

Tateidae species in beach sand from the Far North of New Zealand

Bert van Tiggele

Many of New Zealand's freshwater gastropods remained undescribed for decades after being spasmodically recovered and stored in museums. The family Tateidae was not systematically and comprehensively reported on in New Zealand before Martin Haase published a review in 2008, in which he described 46 new species, bringing the total to 64. (Haase, 2008).

New Zealand collectors, generally speaking, have not been following up and actively collecting these newly described species; due in part to the often-out-of-the-way type localities, the initially determined very restricted ranges and their small sizes – being mostly under 3mm. Some species have varied forms, rendering accurate identification difficult for amateurs and confusion with the very common and variable *Potamopyrgus antipodarum* (Gray, 1843). Determining species by way of DNA is well beyond the reach of amateurs.

In December 1991, the late club member, John Marston collected a large shell-sand sample from the beach of Kapowairua in the Far North. Many years later, this sample was passed to me. From it I extracted *Halopyrgus pupoides* (Hutton, 1882). This small member of the Tateidae lives in brackish water and is recorded throughout New Zealand.

In the same sand sample I found, *Halopyrgus pagodulus* Haase, 2008, No surprise; it being the type locality. However, I was surprised to find it in its two different forms: one carinated and the other smooth. This species also inhabits brackish waters along the coast of north and north-east Northland as well as Great Barrier Island.

The smooth form of *H. pagodulus* I found looks very similar to *Sororipyrgus raki* Haase, 2008. I thought it was so, and labelled it accordingly. This was to be an exciting range extension, given that it is recorded by Haase from Twin Bridges and Waiotemarama – both well south of Kapowairua Beach. With this in mind, I sent specimens to Dr Bruce Marshall, at Te Papa. His response was not what I was expecting, nor wished to read. "No" to *raki,* "Yes" to *pagodulus.* Back to the drawing board!

Halopyrgus pupoides (Hutton, 1882)

***Halopyrgus pagodulus* Haase, 2008 carinated form**

***H. pagodulus* Haase, 2008 smooth form**

My thanks to Dr Bruce Marshall (Te Papa Museum), helping me by providing the correct name.

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Haase, M. 2008 The radiation of hydrobiid gastropods in New Zealand: A revision including the description of new species based on morphology and mtDNA sequence information, *Systematics and Biodiversity,* 6:1, 99- 159, DOI: 10.1017/S1477200007002630

Further relevant literature:

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Climo, F.M.1977. Notes on the New Zealand hydrobiid fauna (Mollusca: Gastropoda: Hydrobiidae). Journal *of the Royal Society of New Zealand* 7, 67-77.

Haase, M ., Marshall, B . & Hogg, I. 2007b. Disentangling causes of disjunction on the South Island of New Zealand: the Alpine fault hypothesis of vicariance revisited. *Biological Journal of the Systematics* 16, 571-582. Linnean Society 91, 361-374.

Ponder, W.F. 1966. On a subterranean snail and a tornid from New Zealand. *Journal of the Malacological Society of Australia* 10, 35-40.

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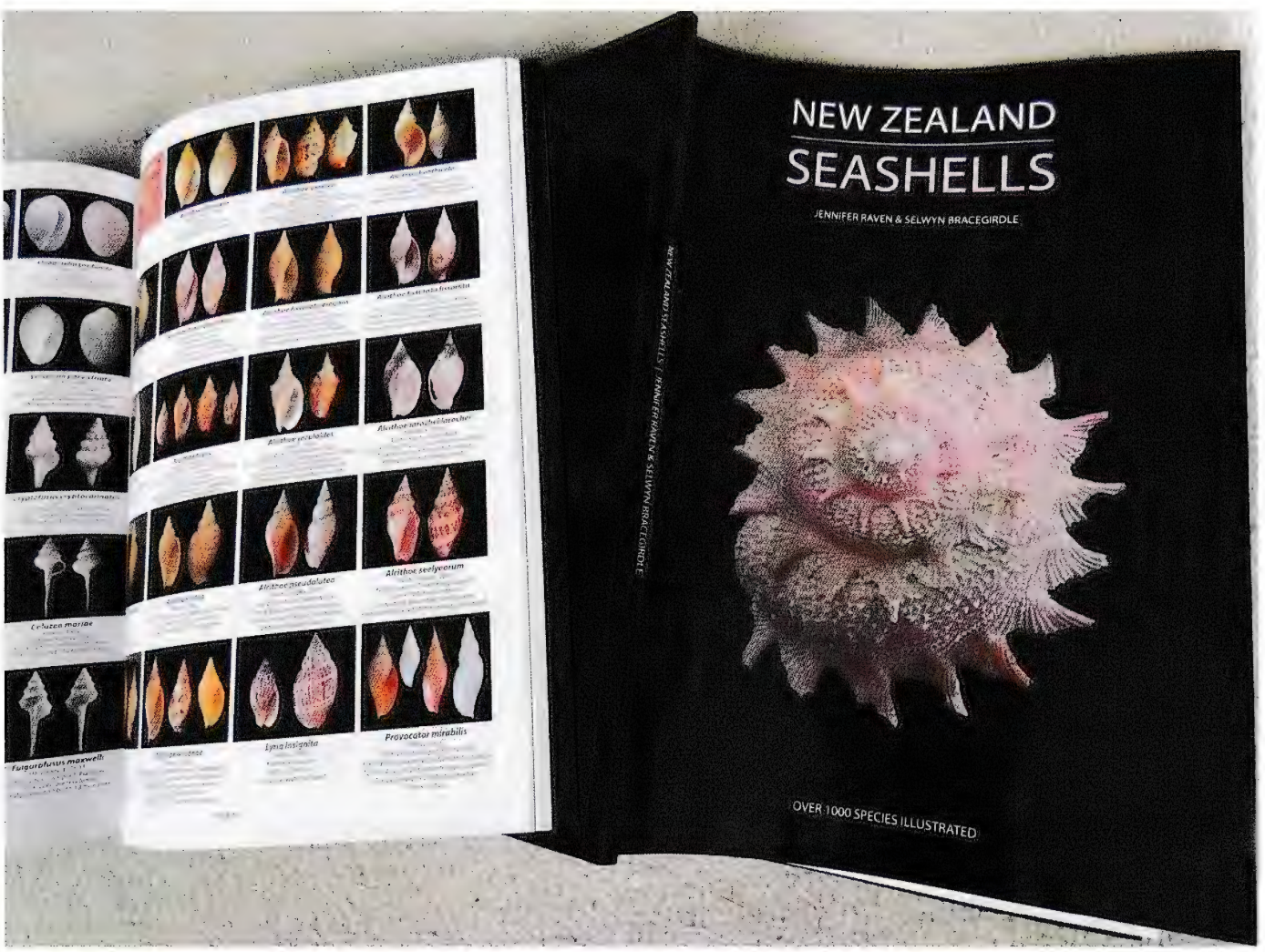
New Zealand Seashells 2020

Jenny Raven and Selwyn Bracegirdle, Wellington Shell Club Members

A must for New Zealand shell collectors, this soft covered book is an update on their earlier published book with 200 additional photos and text. In total it comprises 92 glossy pages with colour photos, updated text and names identifying over 1000 New Zealand marine shell species. The cost for New Zealand shell club members is NZ$60 plus postage and packing. There are limited numbers so if you would like a copy, contact Jenny on ravenjay@xtra.co.nz or +64 21 132 7786.

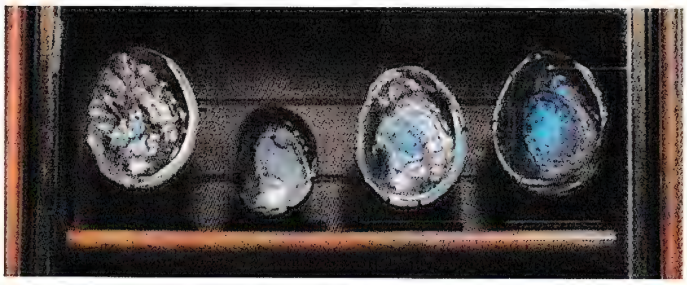


Seeing shells .. and not just on the seashore

Pat Lakeman

In 2023 I was lucky enough to make a trip overseas, and it was pure holiday, with no shell collecting involved[1]. But it was not hard to see shells in many settings, in many places, and it reminded me of the myriad ways that shells have been, and are, used around the world.

It is always gratifying, at museums which have world-wide shell displays, to see examples of endemic New Zealand shells included. At the British Museum I was delighted to see a New Zealand paua *Haliotis iris* Gmelin, 1791 and our "circular saw" *Astraea heliotropium* (Martyn, 1784) included in what was a very small selection of mollusca. These two species featured again, along with a small *Haliotis australis* Gmelin, 1791, at the Natural History Museum (NHM) in London, where their label referred to the *A. heliotropium* as a "sunburst star turban".[2]



***Haliotis iris* (2nd from left) at the British Museum**

***Astraea heliotropium* (bottom left) at the British Museum**

The NHM also displayed Sir Hans Sloane's beautiful nautilus (see separate story) and a large, magnificently carved cassid - described simply as an "Elaborately carved helmet shell". Perhaps they have no other information about it; I failed to find it in their collection list online.

The cassid at the NHM

The "turbo shell cup"

[1] When are these activities separated? Ed.

[2] Refer to the associated historical article originally published in our Bulletin No 20, September 1969.

The Fitzwilliam Museum in Cambridge – such a splendid building, it is an exhibit in itself – also had some examples of elaborately crafted shells as ornaments on display. Its "Turbo shell cup" is a covered drinking vessel but likely has only been used for display purposes. It is 20 cm high, mounted in silver and gold, made in the 17th century probably by Ernst Jansz van Vianen of Utrecht, Amsterdam. Another, a "truly global product", is a nautilus shell cup by an unknown maker. It is 24 cm high, dated to the late 16th century: made in Elizabethan London, probably by an Antwerp silversmith, using a south-east Asian shell which had been engraved in China.

Nautilus shell cup at the Fitzwilliam

At Verulamium, the remains of a town in Roman Britain sited near the modern city of St Albans in Hertfordshire, the scallop is celebrated on a grand scale in a huge wall mosaic, dated to AD140 and uncovered during excavations in the 1930s. The clever wave pattern in black and white around the border looks correct when viewed from any angle.

Scallop design wall mosaic at Verulamium

The scallop was an important symbol to Romans. It represented death and the afterlife and symbolized the journey across the seas to the Blessed Isles, the land of life after death. It was also common in their creation myth of the goddess Venus – Romans believed she was born fully grown from the sea, rising on a scallop shell.

Very old shells sometimes retain their value extremely well: a superbly presented slab of fossil pectens was for sale in the window of an art dealer (Dale Rogers: Ammonites) in Belgravia, London. Its origins were France, Miocene Era (about 20 million years ago). It carried the tantalizing POA label which suggested to me that if I had to ask, I probably couldn't afford it. Luckily, the shop was closed when I was there but other beautiful items on display had price tags of several thousand pounds each or were also "POA".

Pectinids for sale

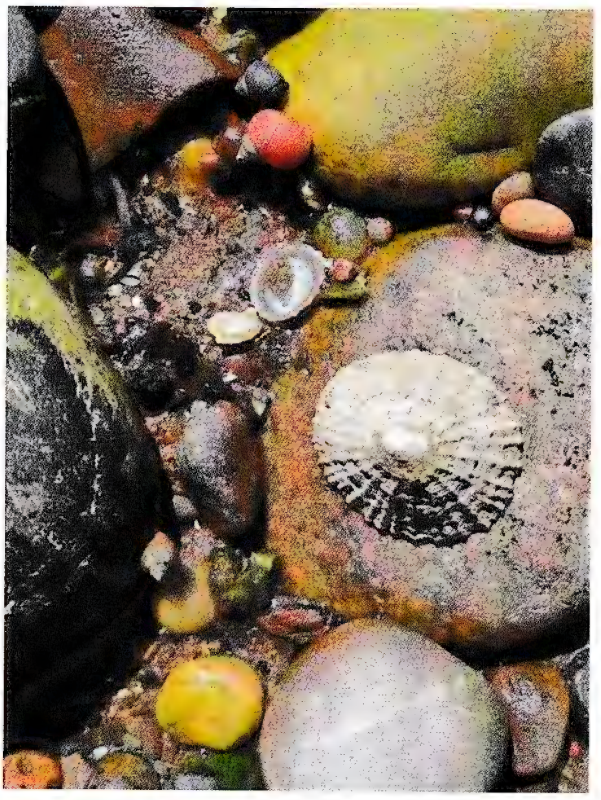
At the time Belgravia was hosting "Belgravia in Bloom" – ephemeral floral street displays associated with the Chelsea Flower Show and free for passersby to enjoy. Even here shells made an appearance. A sea-themed exhibit featured two seahorses almost two meters tall, made almost entirely of flowers but with some real shells in attendance in the foreground.

"Belgravia in Bloom" – ephemeral floral street displays

Thailand has a richly decorated culture and mother of pearl often features in doors and panels in its temples. I didn't see many shells or shell images in my limited time in and around Bangkok. I avoided the option of trying snail soup which was offered on some restaurant menus.

Boiled snail soup – a Thai dish

Did I really not collect any shells? … Yes, I really did not. But I did go to some splendid coastal spots and, when you lift a rock in the intertidal zone, of course there are always shells!



Under intertidal rocks, Boddin Point, Montrose, Scotland

Astraea heliotropium: in history and literature

W J (Bill) Paul[1]

Ed: Readers may be interested in some of the history connected with the *Astraea* referred to by Pat Lakeman in her *Seeing shells .. and not just on the seashore*

Of the shells collected in New Zealand during Captain Cook's voyages, the one which has really made a place for itself in history is *Astraea* heliotropium Martyn, 1784.

Two specimens of this shell were collected on the second voyage, one travelling to England on the *Adventure* and the other on the *Resolution*. The *Adventure* shell was preserved by a now unknown officer of the ship, who sold it to Mr G. Humphrey, the noted shell dealer. Humphrey later sold it to Sir Ashton Lever for £10/10/-. Then Lever's collection was sold in 1806 to one Fillinham, who bought it for £24/3/-. The same shell by some unrecorded transaction eventually reached the collection of the Duke of Bourbon, and when his collection was sold in 1815, it was purchased for the British Museum, where it still is. This shell is illustrated in *Rare Shells* by S.P. Dance[2].

The *Resolution* shell was only discovered as recently as 1960 in the University of Cambridge Museum of Zoology where it had apparently been lying for a long time. It is recorded that Henry Seymer, the noted shell collector of the late eighteenth century, bought it for £2/17/-. The shell and the label, in Seymer's handwriting are illustrated in *Shell Collecting, An Illustrated History* by S.P. Dance[3].

Some interesting history of *Astraea heliotropium* is also given in a paper by the late G.L. Wilkins entitles *Captain Cook's Imperial Sun Trochus*[4]. The early collectors referred to this shell by some rather flowery names as: The Sun Shell; The Imperial Sun Shell and The Roseate Imperial Sun Trochus. I notice that Van Nostrand's *Standard Catalogue of Shells* refers to is as the Sunburst Star Shell, and it is apparently sought after by overseas collectors as the same volume values it at $3. To New Zealand collectors it is now quite a common item, being obtained in quantity in Foveaux Straight, and is living right here in Wellington Harbour. "

[1] Wellington Shell Club Bulletin No 20, September 1969. The late Bill Paul was then the Club President and the late John Marston, the editor.

[2] Published by Faber and Faber. First Edition (January 1, 1969), 128 pages. ISBN-10: 0571082173

[3] University of California Press; First Edition (January 1, 1966) 380 pages ISBN-10: 057106762X

[4] Journal of Conchology Vol 24, 1954

Kawaa Creek and Mangere Revisited[1]

Eric Scott

Heather and I have continued with sifting out, photographing and identifying fossil shells from matrix collected from Kaawa Beach in the Waikato Region, and from excavations at Mangere Wastewater Treatment Plant in the Auckland Region; all gathered in 2021/22.

It has been a long project of ours, which is finally coming to an end with only a small amount of material from Kaawa Beach left to sift through. There are though, still shells to identify and photograph from both sites[2]. However, I am not expecting to find many more new species to add to the list, but possibly better examples of species already identified & photographed. In addition to fossil molluscs, we have found many other marine fossils, albeit mainly micro-ones, such as fish teeth, sharks' teeth, stingray grinding plates, otoliths (fish ear bones), crab claws, bird bones, bryozoans, corals, brachiopods, polychaete worms, etc., most of which, remain to be photographed and sent on to other various experts to identify. I include a photograph of a well-preserved *Echinoidea* sp. (Sand Dollar) by way of example.

***Echinoidea sp.*, Mangere Wastewater excavations, Auckland Region. Diameter: 60.3mm**

The Kaawa Beach material is from the Opoitian age, 3.6 – 5.0 million years old, while the Mangere material is slightly younger being from the Waipipian age, 3.1 – 3.6 million years old.

[1]I have a list of species found so far from both sites, together with a selection of photos of some of the more unusual & exquisite ones that we have found. In addition, I do encourage students to read the paper referenced here – listing the astonishing 182 species recovered.

Acknowledgements:
Dr. Bruce Marshall, Consultant Malacologist, at Museum of New Zealand Te Papa Tongarewa, very kindly checked and corrected the Mollusca identities and I am indebted to him for his patience and knowledge of fossil molluscs. I am also indebted to the late Dr Alan Beu, Emeritus Scientist of GNS Science, Lower Hutt, Dr Bruce Hayward, Principal Geomarine Scientist at the University of Auckland, and Dr Seabourne Rust for their valued input.

Reference:

Hayward, B. W., Stolberger, T. F., Collins, N., Beu, A. G., & Blom, W. (2023). A diverse Late Pliocene fossil fauna and its paleoenvironment at Māngere, Auckland, New Zealand. *New Zealand Journal of Geology and Geophysics*, 1-22.

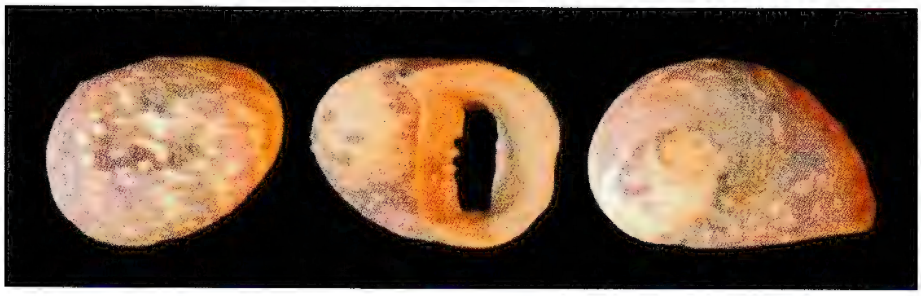
Dentaliidae. *Antalis sp.* - In sea-cliff matrix, Kaawa Beach, Waikaretu. Height: 8.3 mm

Turritellidae: *Stiracolpus sp.* - In sea-cliff matrix, Kaawa Beach, Waikaretu. Height: 16.1 mm

Skeneidae: *Cirsonella sp.* - In sea-cliff matrix, Kaawa Beach, Waikaretu. Height: 0.9mm

Skeneidae: *Liotella sp.* - In sea-cliff matrix, Kaawa Beach, Waikaretu. Height: 0.7mm

Muricidae: *Reishia* n.sp. Mangere Wastewater excavations, Auckland Region. Diameter: 58.6mm



Neritidae: *Nerita* sp. Mangere Wastewater excavations, Auckland Region. Diameter: 26.6mm

[1] Refer *Cookia* Vol 34, November 2022 2-3.

[2] Ed: Eric has many hundreds of colour photographs of material obtained from both sites, which he is happy to share with members. He will also provide a comprehensive list of the species found and validated. Those interested should contact him at ericwarrenscott@extra.co.nz

Roving Reporter - continued from 2022

Pat Lakeman

This is a nautilus shell (*Nautilus pompilius* Linne, 1758), from the collection of Sir Hans Sloane, now housed in the Natural History Museum, London.

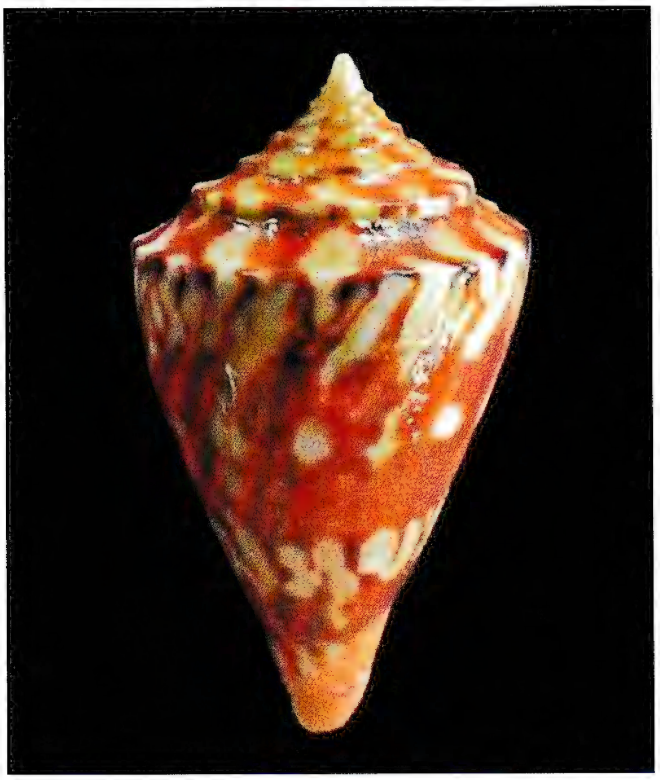
The shell was carved by Dutch artist Johannes Belkien in the late 1600s. Sloane loved beautiful objects and believed the carving enhanced the natural perfection of this nautilus.

The coil of the nautilus shell follows the golden ratio used by Leonardo da Vinci to create proportions pleasing to the human eye.

The lustrous nacre that lines the shell interior is prized for jewellery & artifacts such as Sloane's, but all nautilus species are now threatened due to overfishing and, in 2016, they were included in CITES Appendix II which restricts international trade.

Sloane collected over 400,000 objects, including plants, animals, antiquities and books, at great cost. On his death he left them to the nation, and his collection formed the core of the British and Natural History Museum. London.

Notes on New Zealand Collected Species
and pictures to be proud of



Conasprella howelli
(Iredale, 1929)

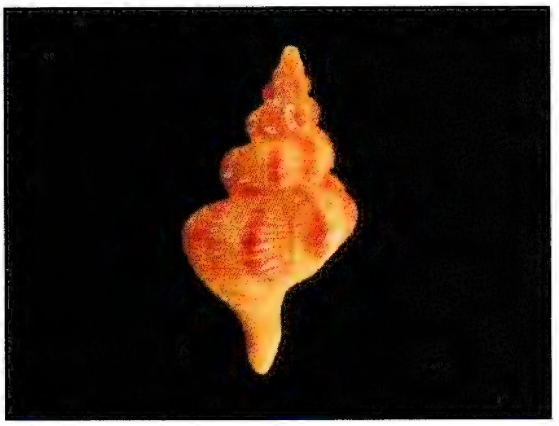
38mm. Dredged - 28m Mercury Bay. 4 December 2022, live on dead *Tucetona laticostata,* amongst rocks and rubble

Claire Elliot

Glaphyrina plicata
Powell 1929

35mm. Found dead wedged in a rocky crevice on a reef at low tide near Rawhiti, Bay of Islands, September 2022.

Jenny Raven



Bassina yatei
(Gray, 1835)

A lovely colour and sculpture that won "Shell of the Show Bivalve" at the 2023 Townsville Shell Show. It was found at Rototai, Golden Bay, perfectly preserved in mud on the Wellington Shell Club trip to the area last year. This shows a shell does not have to be rare to be a prize-winning shell and anyone can find a show winner.

Jenny Raven

New Zealand *Alcithoe*

Townsville Shell Show. First Prize, category: Worldwide Volutidae; one genus.

Jenny Raven

Chicoreus

Townsville Shell Show. First Prize, category: Worldwide Muricidae — *Chicoreus*

Kris Woods

Naturally Coloured Shells

Keppel Bay Shell Show, First Prize, Category: Worldwide Naturally Coloured Shells.

Jenny Raven

Haliotis iris

Keppel Bay Shell Show, First Prize, Category: Open Theme (NZ Paua).

Heather Smith

Emozamia licina

(Hedley & Petterd, 1906)

10mm subadult. Dredged live, 30m, Mercury Bay, 24th March 2023, living on dead cup coral, *Monomyces rubrum*,(Quoy & Gaimard, 1883) and live *Pecten novaezelandiae*, coarse sand, broken shell, Xenophora, and other muricid species. Emozamia was thought to live associated with the cup coral (largely due to there being very little else for it to live on) Having this example found directly associated with the coral strongly supports the suggestion that that is the obligate host.

Claire Elliot

Buccinulum mariae

Powell, 1940

Bay of Islands

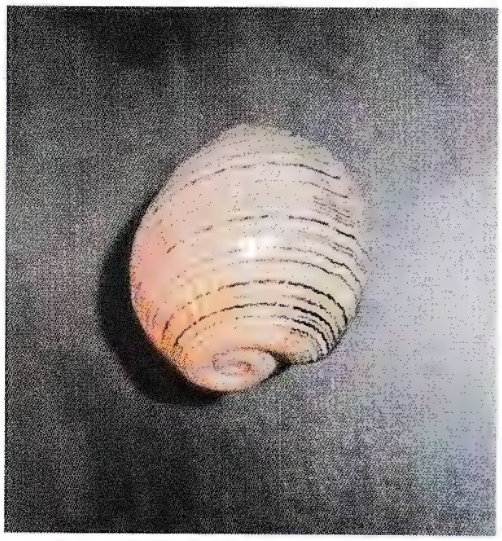
Jason Plaisted

Hydatina physis

(Linnaeus, 1758)

Bay of Islands

Jason Plaisted



Plocamopherus imperialis

Angas, 1864

Matai Bay

Jason Plaisted

Holiday Finds in Australia

Kevin Burch

This article had its beginnings during a drive on a trip to Australia in May 2019 where Jude and I attended a function at Maryborough, southern Queensland.

After arriving in Sydney, we began our trip north, collecting shells on local beaches. The following day north to Coffs Harbour where we visited the port and marina area. Here, prawn trawlers and other fishing boats lay berthed. This would be a 'must' for any keen shell collector with a few days to spare. Friendly contacts with trawlermen can bring real rewards. While Jude and our friends were busy elsewhere, I wandered into the local fish shop. This was far larger than our New Zealand equivalents, selling a very large range of local catch, together with fish and shellfish from other fishing grounds, including oysters, prawns and deep-water fish species.

To my surprise there on the ice, for sale, was a pair of volutes: ***Cymbiola magnifica***, (Gebauer, 1802) one, a good size and the other, huge. The larger for A$25, the other, A$20 The animals were still inside, indicating it was the meat that was valued. Considerable pondering, but I left *sans* volute. Too much of a hassle to clean. very much to my wife's surprise.

We continued our road trip north. Most of the beaches on the coast do not have any turnable rocks or boulders. Limpets and littorina were plentiful, easily collected and processed and, in the sand between waves I found a very pretty colourful little Naticid: *Conuber incei* (R.A. Philippi, 1853), which pops out between waves then gets swept to a new feeding locality.

***Conuber incei* (Philips, 1853)**

After a worthwhile boat trip in an area separating Surfers from the mainland, we walked back along the beach, where I found a pair of keyhole limpets, ***Diodora lineata*** (G.B. Sowerby I, 1835), together with many pieces of a large very striking species of Cardium, probably ***Vasticardium wilsoni*** (Voskull & Onverwagt, 1991), or ***V. elongatum*** (Bruguière, 1789). The single but broken valves that I found were close to 100mm in height.

Travelling south towards Nambuca Heads, our host took the road back into Coffs Harbour. My query as to destination was met with a "Don't you want to get those shells from that fish shop?". There, to my utter surprise both were still in the same place on the ice. Jude did a little deal, ending up with the larger one for A$15! I partially cleaned the volute at the estuary near our motel – a job I finished next morning.

A 'must do' for anyone visiting any place overseas is go into any fish market or place that sells fish. You may be surprised what you find.

My ***Cymbiola magnifica*** measures an incredible 303mm[1]. It is a gem specimen of amazing colour and has the story and memory of that trip to go with it. We have just returned from another road trip with the same friends, travelling from Sydney to Newcastle and then down the coastal road through New South Wales and on to Melbourne, calling at a lot of beaches and beautiful coastal towns on the way. That's a story for another time.

[1] WoRMS show that a common size for *C magnifica* is 250 mm. This was certainly a large specimen.

Register of New Zealand's Largest and New Zealand's Sinistral Shells

Peter Poortman

For many years there has been a "***Register of Largest New Zealand Shells***" on the Auckland Shell Club website at www.aucklandshellclub.net.nz.

The purpose of this register is to centrally record the largest shells of any New Zealand species that is over 10mm in size.

Some of the fun of collecting is knowing that you have the largest specimen of any species, but this information also has some scientific value.

If a species is not listed in the register, that is only because no-one has yet submitted a size for it.

Anyone can submit their shell sizes to this register, even if not a member of a shell club. Submissions should be emailed to aucklandshellclub@gmail.com, with the following information ...

Genus/species name.
Taxonomic family and author (if known).
Shell length in millimetres, to 10th of a millimetre accuracy.
The shell owner's name and contact details, and if applicable the repository of the shell (e.g., museum name).
Data on where and when the shell was found (if known).
A photo of the shell with a calliper or ruler on the side.

Note that ...

Measurements must be the longest straight-line length of the hard shell in any dimension, excluding external growths and other abnormal attachments.
Largest shell sizes will not be recorded for fossil shells, or for shells less than 10mm in length. Species forms are not recognised either as this is not an official taxonomic classification.
Measurement accuracy to 10th of a millimetre is required, so we ask that you use callipers or similar device and get someone to double check your measurements.
We trust everyone's honesty, so proofs of your submissions are not required. However, if anyone is found to have made false claims then they may be excluded from participation in this register.

Please also let us know if any shells listed in this register change ownership, so that the records can be updated.

There is an official "*Registry of World Record Size Shells*" at www.wrs-shells.com, but this has no connection to our local register. The WRS website contains photos of each record size shell but charges one euro to view each record. And unfortunately, many New Zealand shells in that WRS database are mis-identified.

Our New Zealand shell register is an Excel workbook. If you do not have Excel on your device, then you can download and install a free Excel Reader from the internet or app store.

Until recently the workbook also contained a register of sinistral New Zealand shells for species that are not normally sinistral. But to make it more visible, that register has now been relocated to a separate ***"Register of Sinistral New Zealand Shells"***.

This is an Excel workbook in a similar format to the largest shell register. The only difference is that each species can have multiple entries - we want to record all sinistral specimens.

Do you have any New Zealand shells that are larger than our records, or sinistral New Zealand shells that are not listed in our registers?

If so, please let us know at aucklandshellclub@gmail.com.

A Year Above and Below the Waves of Wellington's South Coast

Margaret Elliot

Everybody has different motivations that drive their interest in molluscs and shell collecting. Last year I focussed upon photographing the living animals in their environment observing and recording their habitat.

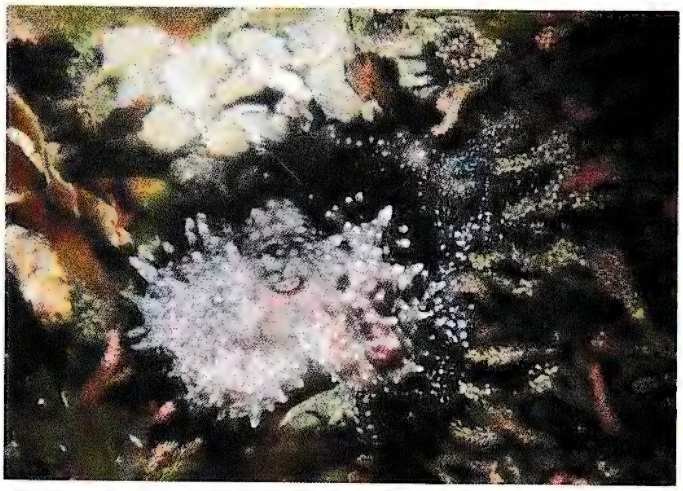
This year I have continued to do this. I now have a 7mm wetsuit, so I have been able to continue snorkelling through the winter, when the sea is calm enough. It is interesting to observe the effect of heavy seas upon the seaweed and to see if species are absent or more prevalent and to see if any new ones pop up. My most exciting find has to be a rare nudibranch, the Southern Baeolidia. I continue to be amazed at the prolific and diverse seaweed forest and its varied colour palette. There are streamers of red and most surprising iridescent blue algae.

The winter storms favour walking the beaches and sifting through the washups for interesting finds. One day after sorting the highlights from my collecting bag I decided it would be an interesting project to draw my finds. I find drawing to be an absorbing practice that makes you slow down, observe intensely and really appreciate the form, colour and surface pattern of shells and other marine life. My favourite drawing medium for shells is pastel pencil on brown paper, I also like using coloured pencil on black paper for the underwater landscapes.

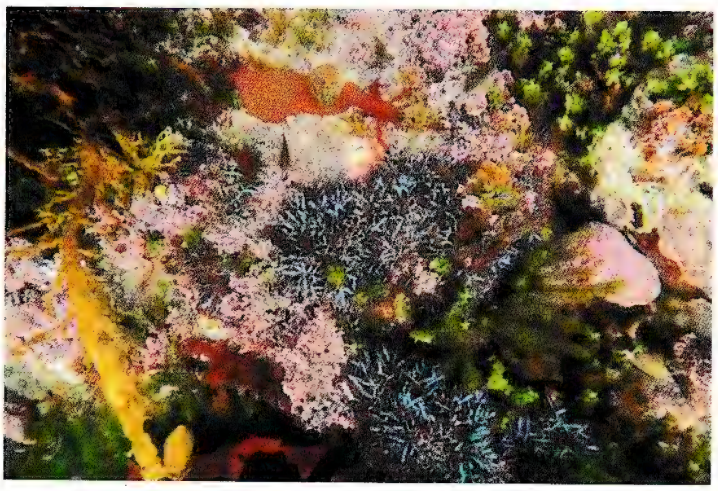
This year I have included some images of my artwork as well as the underwater photographs. I have broadened the focus to include some of my favourite places not included in the Marine reserve including Waitaha Cove, Lyall Bay and Scorching Bay. It is interesting to compare the varied ecosystems when visiting different sites.

***Baeolidia australis* (Rudman, 1982). Island Bay Wellington**

***Atagema carinata* (Quoy & Gaimard, 1832). Island Bay, Wellington.**



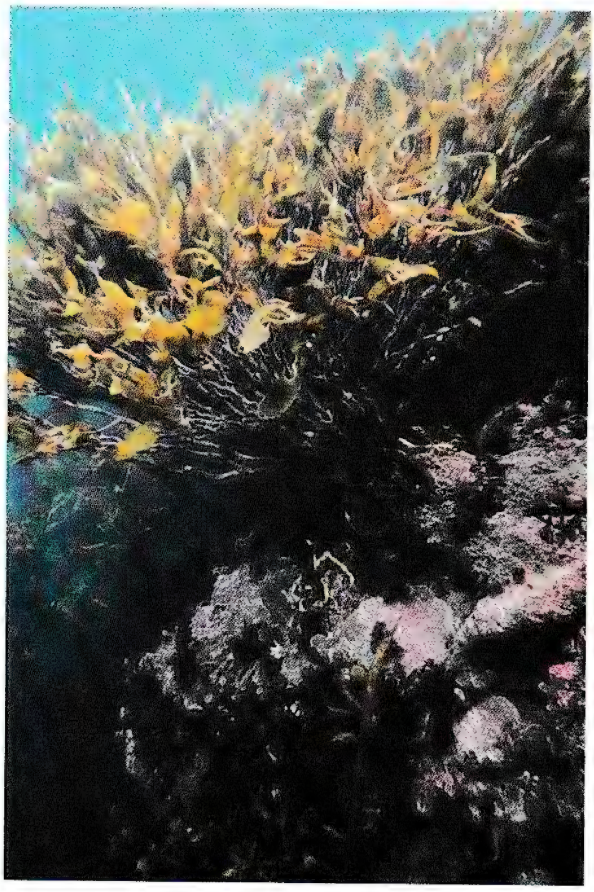
Camouflaged octopus, *Macroctopus maorum* (Hutton, 1880). Island Bay, Wellington



Iridescent blue algae: Taputeranga Marine Reserve

Seaweed garden: Taputeranga Marine Reserve

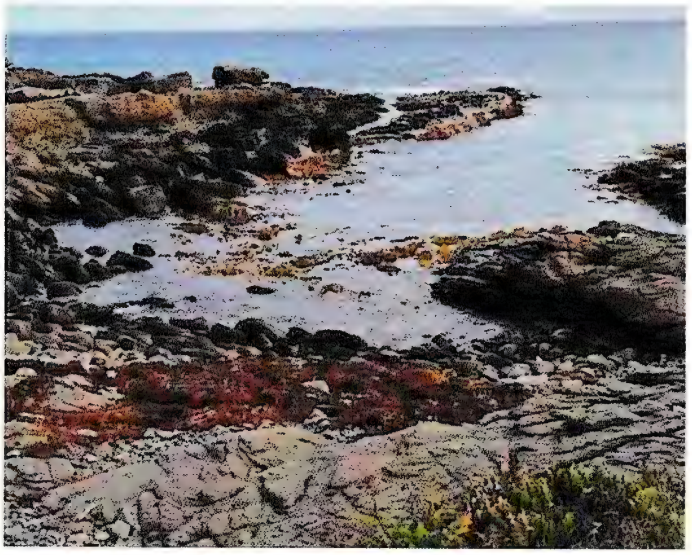
***Goniobranchus aureomarginatus* (Cheeseman, 1881) Owhiro Bay, Wellington**



Taputeranga Marine reserve in winter with *Cookia sulcata* at bottom right

Collecting at the Catlins

Kathy Carson



View from Camp area at Porpoise Bay

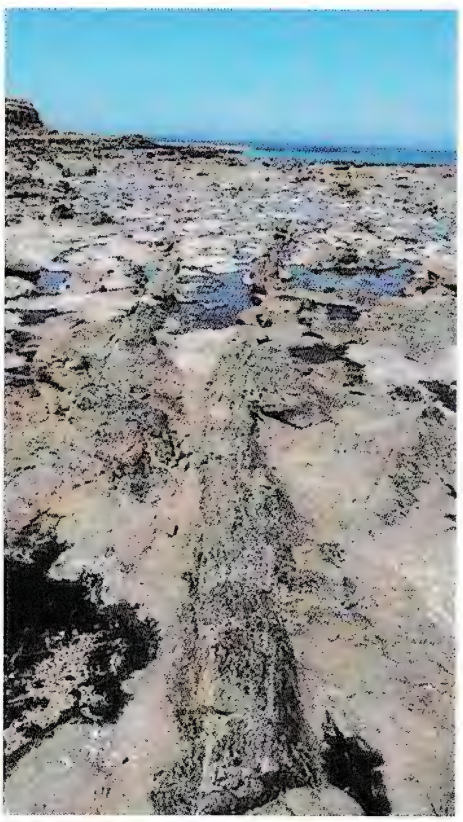
Porpoise Bay, Catlins is 180km south of Dunedin. It is picturesque with a variety of wildlife. The Hector dolphins can be seen close into the shore jumping out of the water while feeding in the early evening, a great sight from the cliff at the camping ground. Many people brave the cold water to interact with the dolphins and the beach is famous for surfing with its own surfing school.

Porpoise Bay itself has rugged rocks to the right that are liberally covered in *Cellana strigilis* (Hombron & Jacquinot, 1841) and a few common species of Trochidae. One does need to look out for seals. Some nice finds included *Modelia granosa* (Martyn, 1784) and *Maurea granti* Powell, 1931.

My passion is gathering shell grit from the runnels to take home to sort out the small bivalves and gastropods and of course this does not disappoint. I retrieved 3 very nice *Cantharidus antipodum* (Hombron & Jacquinot,1848), and many Liracraea *epentroma epentroma (*Murdoch, 1905) along with *Liracaea epentroma whangaroaensis* (Murdoch, 1905). Both are known from Otago southward.

***Liracraea epentroma* & *L.e. whangaroaensis* (Murdoch, 1905)**

***Cantharidus antipodum* (Hombron & Jacquinot, 1848)**



Petrified forest at Curio Bay

Just a 10 minute walk around the Bay to the south is Curio Bay, famous for the 170 Ma petrified forest which is best viewed on the rocky platforms at low tide or from the viewing platform above. This is an ancient geological site of great value and interest. It is also a marine reserve so nothing can be removed – including shells or even shell sand.

In the early evening yellow eyed penguins emerge from the sea to begin their trek up the shore to roost.

The Catlins is a very large area and hosts numerous activities from bush walks to famous waterfalls, namely Purakaunui Falls, McLean Falls and Matai Falls. Nearby is Pounawea, a sheltered inlet. This area has enjoyable bush and estuary walks and is well worth being explored. Taking the coastal route north, will reveal even more beaches worth checking out.

Photographing Shells for the Purposes of Identification

Jason Plaisted

Let me start out by saying that I am no expert in photography or with molluscs, and that this guide is not exhaustive. However, I have been fortunate to receive some advice from professional malacologists and I have learned some tips on how to photograph shells for identification purposes. We can help others and experts to identify shells by taking photos that are: clear and in focus, that show the shell from certain viewing angles, show consistent orientations which allow the viewer to see key areas of the shell. This also enables easier comparison with images of similar shells/species.

It should be noted that even by following these steps, you may still not get an ID on your shell. This can be for many reasons, including that the species might be part of a taxonomically unresolved species complex. Another could be that you're not using a suitable camera that can take good photos of shells. We will discuss this later, but keep in mind that phones may not be enough to get the kind of images that are required.

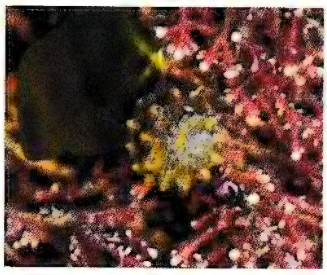
Foundations

In order to get the best results from our photographs and to assist the identification process, we need to cover a few key points. Some of this may seem obvious or straightforward but may prove useful to you or others.

Shell Quality

Broken or partial shells will be more difficult, or impossible to visually identify. Some common shells may be easily identified by a fragment, but only so much can be done when key features are missing. However, shell(s) or shell fragments of very high scientific importance in this situation could have their DNA sequenced which would likely reveal more information. A very old shell that is bleached white by the sun may also prove to make identification problematic, as with shells that are altered due to other processes such as anerobic conditions. Shells that are covered in algae or other life (biofoul) may also inhibit the identification process. Best to take some safety photos before attempting to remove stubborn growths and make a judgement call as to whether or not the act of removing the growths might damage the shell.

Something to bear in mind is that receiving an identification for a juvenile or sub-adult, can be more challenging than identifying the adult form. Young shells can look very different to the adult shell. However, knowing if you are looking at a juvenile or an adult shell is challenging also in many cases. Experts will usually still be able to identify them.



Juvenile *Lunella smaragda*

Photo by Christopher Stephens (CC-BY-SA) Image cropped

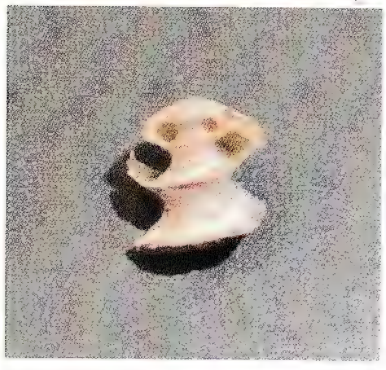
Adult *Lunella smaragda*

Photo by Javier Couper (CC-BY) Image cropped

Focus

I see quite a few photos of shells where the image is blurry and out of focus. If blurry it will make it more difficult to visually identify the shell and see the finer features. By using the right kind of photographing equipment, coupled with good techniques, this will enhance your photographs. Large shells are generally easier and you could use most cameras and smartphones when photographing them. Medium to small sized shells may prove challenging and some cameras or smartphones will work well with some skill. Very small shells, however, usually require specialized photographic equipment and skill to properly focus. Discussing photography gear and photography technique is a very deep rabbit hole, not to be explored here[1]. One thing that might immediately assist you in getting better photos is finding out what the 'minimum focusing distance' is for your device . My GoPro action camera has a minimum focusing distance of 30 centimetres. Anything closer to this camera would be unfocused. Reviewing your photos to check that they are in focus is a good practice.

[1] Refer *Cookia* Vol 34 p27 for article by Fred Keil.



Lighting and Editing

Here is a regular photo of a gastropod. For purposes aside from identification, its perfectly fine to take a photo in any way you like. However, when it comes to photos of shells for identification, we want photos that are as true to life as possible. As such, photos should be taken ideally in lighting that does not significantly alter the appearance. Be aware that lighting can affect how colours are represented in a photo.

Here is a very similar photo taken of the same shell but with a different light source used, rendering different colours. Be mindful and review your images to ensure they are as true to life as possible. It might be best to use natural daylight rather than artificial light.

Another aspect of lighting that may cause issues is the harshness of the light being used. Depending on the surface of the subject shell, if it is highly reflective, then you may encounter glare or areas that show no details because it is now just a bright reflection of the light source. We want as much detail as possible. Glare may call for other light sources or use of light diffusers.

Digital photo editing should be kept to a minimum, this means not using colour filters or other digital manipulations that would either digitally remove pieces of the shell by mistake or make the shell less true to life which defeats the purpose of the exercise.

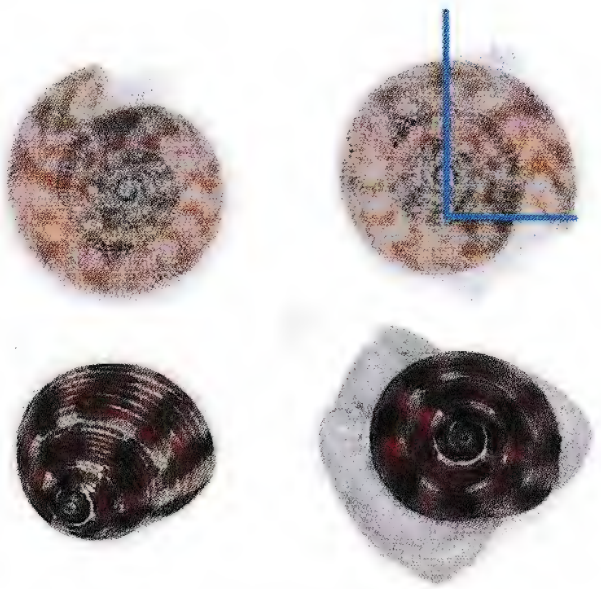
Photographing gastropods for identification

There are three main angles or orientations that we should capture when photographing a gastropod.

1. Dorsal view

The dorsal view is a bird's eye view of sorts, looking down onto the top or adapical end of the shell. Depending on the shell and if the shell is not sinistral then ideally, we want to have the outer lip to the right of the shell and at right angles as shown in the picture. Additionally, we want the tip of the spire or protoconch to be pointed directly at the camera with no, or as little, tilt/angle as possible.

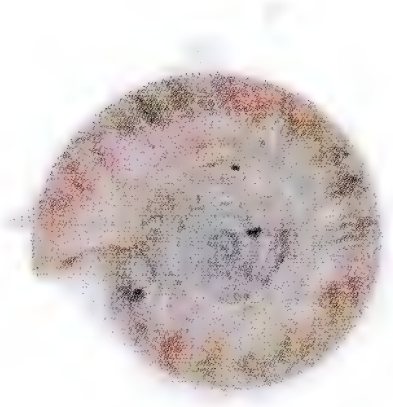
Most shells do not sit flush on a flat surface. Use Blu-tack or a similar product to orient the shell to the camera. Ensure that no small lumps of Blu-tack are stuck to the visible side of the shell you want viewed. Black plasticene works well. It will help with lighting and editing and can leave less oil on the shell. A dark plasticene or tack may show through translucent shells. Tools such as fine probes or forceps can be used to manipulate the shell but be careful. If the shell is extra fragile then you might want to use a different method such as a bath of fine sand. Orienting the shell can be achieved by moving the sand rather than the shell. As a tip, when using materials like black plasticene, instead of making a bowl-shaped depression, try making a cross-shaped depression from where gentle contact can move the shell into the right orientation.



Dorsal view

2. Ventral view

The ventral view is essentially opposite to the dorsal view, where we look underneath the shell. Apply the same methods here as for the dorsal view. with the only difference being the outer lip is on the left-hand side. This view may perhaps give the most trouble as you will be balancing the shell on its spire. Employ the same methods of using Blu-tack or similar to orient it. Some shells can host life inside their umbilicus, such as other smaller molluscs. Take safety photographs before you remove them if you decide to, although it could be beneficial to leave them.



Ventral view

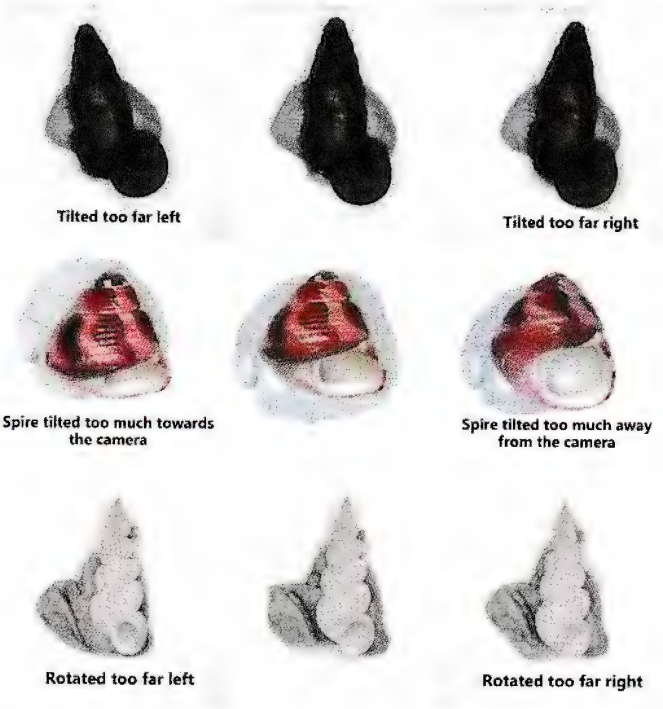
3. Apertural View

The apertural view gives a profile view of the shell and as the name suggests, allows a look at the shell's aperture. The shell should be oriented so that the spire is pointing directly upwards.

The other orientation to coincide with the above orientation, is to have the spire pointing at a 90-degree angle to the camera.

The third orientation to coincide with the two orientations above is that the aperture is square on to the camera and the shell is not rolled too far left or right.

Orientating a specimen is important.


Tilted too far left
Tilted too far right
Spire tilted too much towards the camera
Spire tilted too much away from the camera
Rotated too far left
Rotated too far right

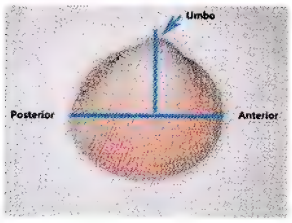
Photographing Bivalves

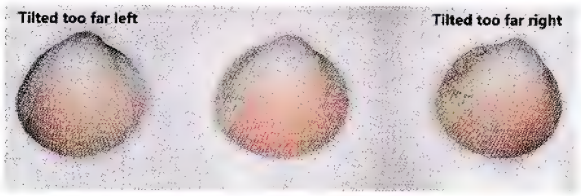
There are up to three (or four depending on the shell) main photos that we should take when photographing bivalves. Sometimes we find only a single valve. Most can be identified from an exterior image, so photograph this first. Other features can be dealt with later should that be necessary.

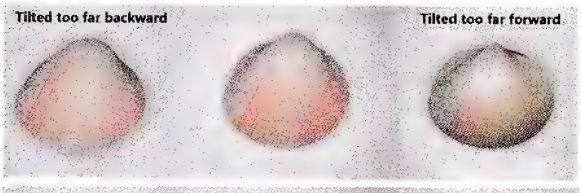
1. Exterior right valve

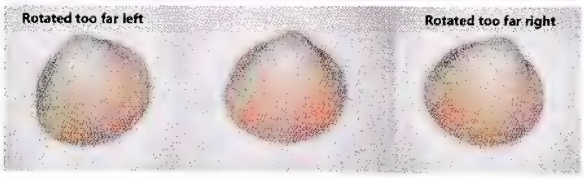
The right valve is the valve which has the posterior of the shell, when viewing the exterior of the shell, on the left and the anterior on the right. The exterior of the valve should be square on to the camera and with the umbo vertical as in the image here. This right valve can be considered in most cases as the main valve to photograph to help with uniformity in identification.

A single valve may sit flush on a flat surface but in many cases, it will not sit flush, requiring use of methods discussed earlier. Hide the levelling material(s) behind the shell where possible, if both valves of the shell are attached and equal then taking an image only of the right valve should suffice. If both valves are not equal, such as you might find with *Pecten novazelandiae*, then take exterior images of both valves.



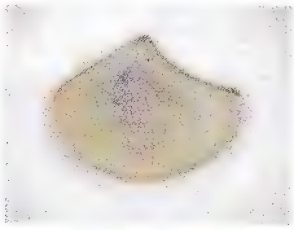






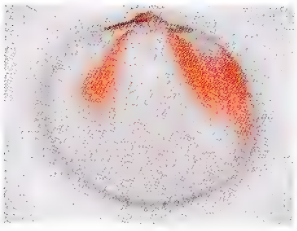
2. Exterior left valve

With this shell the left valve is unequal to the right valve, being flat and not convex. The left exterior valve should be imaged too.



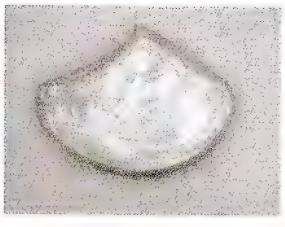
3. Interior right valve

If the valves are separated; it is recommended that you image the interior view of both valves. The same **orientation** is as for the exterior. Since this is the right valve and has been turned over, the posterior is on the right and the anterior on the left. Most bivalves, being convex, will require orienting materials like black plasticene or the others methods we discussed above.



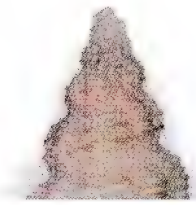
4. Interior left valve

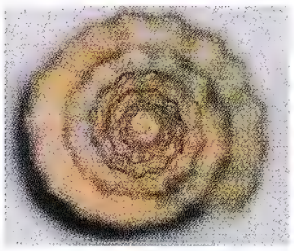
Using the same methods, image the interior left valve if required and especially if you have imaged the interior of the right valve. Be aware, like with this shell, that the interior can be highly reflective. Because of how highly opalescent this shell was I had to take measures to reduce the harshness of the light being shone on it so that details were not lost that might be key to identification.



Supplementary photographs and information

We have looked at the three main photographs needed for identification of gastropods. There can be times when additional photos are required and may be requested by someone (usually an expert) trying to identify your shell(s). One such supplementary photo that could be requested is a protoconch photo. The protoconch can hold certain secrets as well as what the shell looked like when it was a juvenile. Areas that would be of particular interest would be the protoconch/teleoconch boundary. As well, a dorsal view image of the protoconch whorls. Both of these kinds of images will likely require a higher level of magnification.



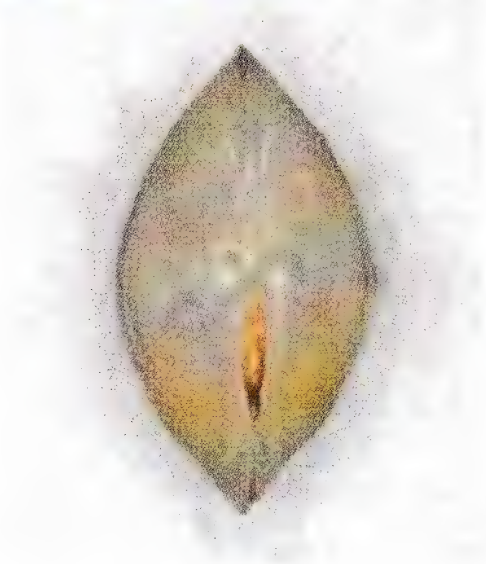


For a bivalve, you may also be asked for a dorsal view image, which is looking top-down at where the two valves join.

As most of us know, information is key. The location of where the shell was found, the habitat, the depth and so on, are incredibly valuable. This is not only for collection value and scientific records, but can greatly aid identification. When submitting your photos, remember to provide all relevant data.

Juvenile *Coelotrochus chathamensis*

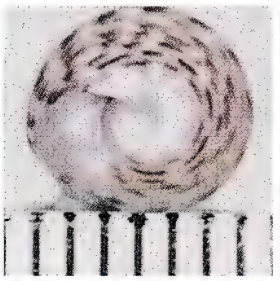
Image by Luca Davenport-Thomas (CC-BY-SA) Photo cropped, text and arrow added

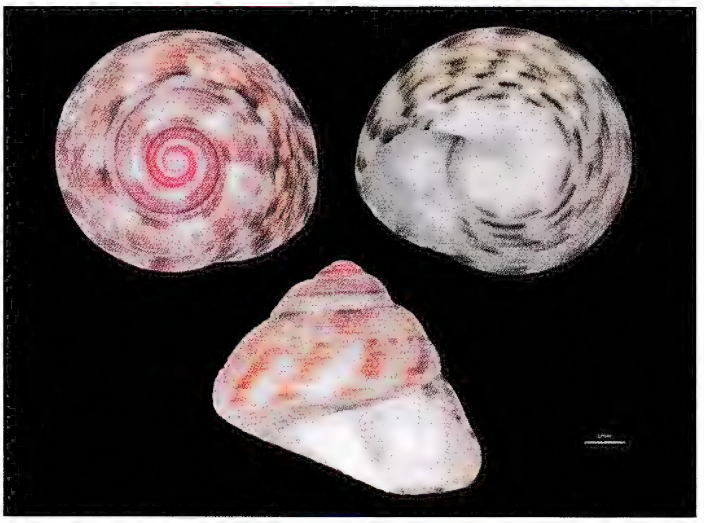


Dorsal view of bivalve

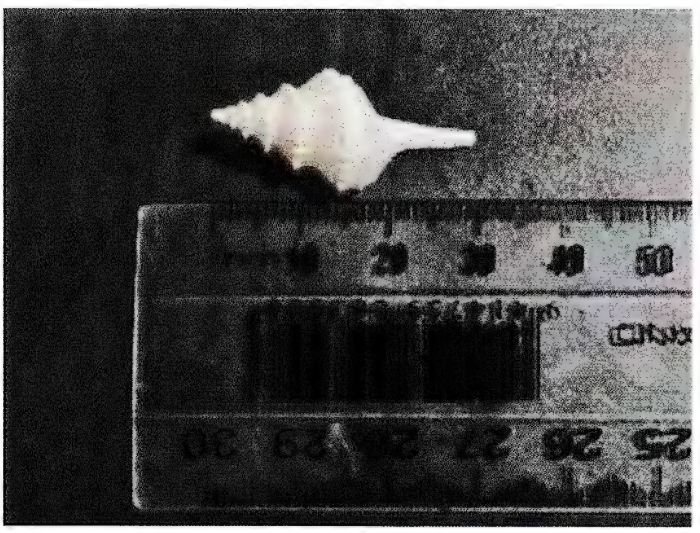
Size and scale

In your images for the purpose of identification, you may also like to include a scale. Looking at a photo of a shell, especially when there is nothing indicating size, a scale gives an excellent reference point. You may also like to measure the shell using a ruler, or vernier callipers.





Adult *Coelotrochus chathamensis* with 1 mm size reference scale



Final thoughts

Most shells can be resolved morphologically by experts. With the right information and the right images, we can greatly assist with the identification process and accuracy. However, despite our best efforts, sometimes an image just isn't the same as looking at and inspecting a shell in person. You may be asked for more photos than those detailed here, but hopefully this helps give you an idea on what might be expected and how to get better images for your shell identifications.

Glossary of Terms

- **Adapical** - Toward the apex of a shell. Source: https://en.wikipedia.org/wiki/Glossary_of_gastropod_terms
- **Aperture** - The aperture is an opening in certain kinds of mollusc shells: it is the main opening of the shell, where the head-foot part of the body of the animal emerges for locomotion, feeding, etc.The term aperture is used for the main opening in gastropod shells, scaphopod shells, and also for Nautilus and ammonite shells. Source: https://en.wikipedia.org/wiki/Aperture_(mollusc)
- **Bivalve** - Belonging to the Molluscan class Bivalvia. Usually having a shell composed of two valves, hinged together. Includes clams, oysters, scallops. Source: https://www.mollusca.co.nz/glossary.php
- **Gastropod** - The gastropods (/ˈgæstrəpɒdz/), commonly known as slugs and snails, belong to a large taxonomic class of invertebrates within the phylum Mollusca called Gastropoda. Source: https://en.wikipedia.org/wiki/Gastropoda
- **Morphologically** – Referring to the form and structure of organisms and their specific structural features. Source: https://en.wikipedia.org/wiki/Morphology_(biology)
- **Protoconch** - Embryonic shell in Gastropods, often preserved at apex. Source: https://www.mollusca.co.nz/glossary.php
- **Sinistral** – Left hand coiled Gastropod, opposite of dextral. Source: https://www.mollusca.co.nz/glossary.php
- **Spire** - In Gastropods: all whorls except last one (body whorl). Source: https://www.mollusca.co.nz/glossary.php
- **Taxonomy** – The scientific study of naming, defining (circumscribing) and classifying groups of biological organisms based on shared characteristics. Source: https://en.wikipedia.org/wiki/Taxonomy_(biology)
- **Teleoconch** - Entire shell, other than protoconch Source: https://www.mollusca.co.nz/glossary.php
- **Umbilicus** - Gap between reflected inner lip of shell aperture and the first body whorl of Gastropod. Source: https://en.wikipedia.org/wiki/Umbilicus_(mollusc)
- **Umbo** - The older part of a Bivalve shell, sometimes called the 'beak'

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I acknowledge Kerry Walton for his comments and suggestions on parts of this manuscript.
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Thanks also to our 2023 Cookia team.
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About *Cookia*

Cookia has been the annual journal of the Wellington Shell Club since 1976. Prior, the Wellington Shell Club published a Circular (1956-1965) and then a Bulletin (1967-1975) as well as occasional Study Notes on families of molluscs. Copies of *Cookia* more than 10 years old are available as a PDF on the website. Contact any committee member to request back copies or copies of articles (charges may apply).

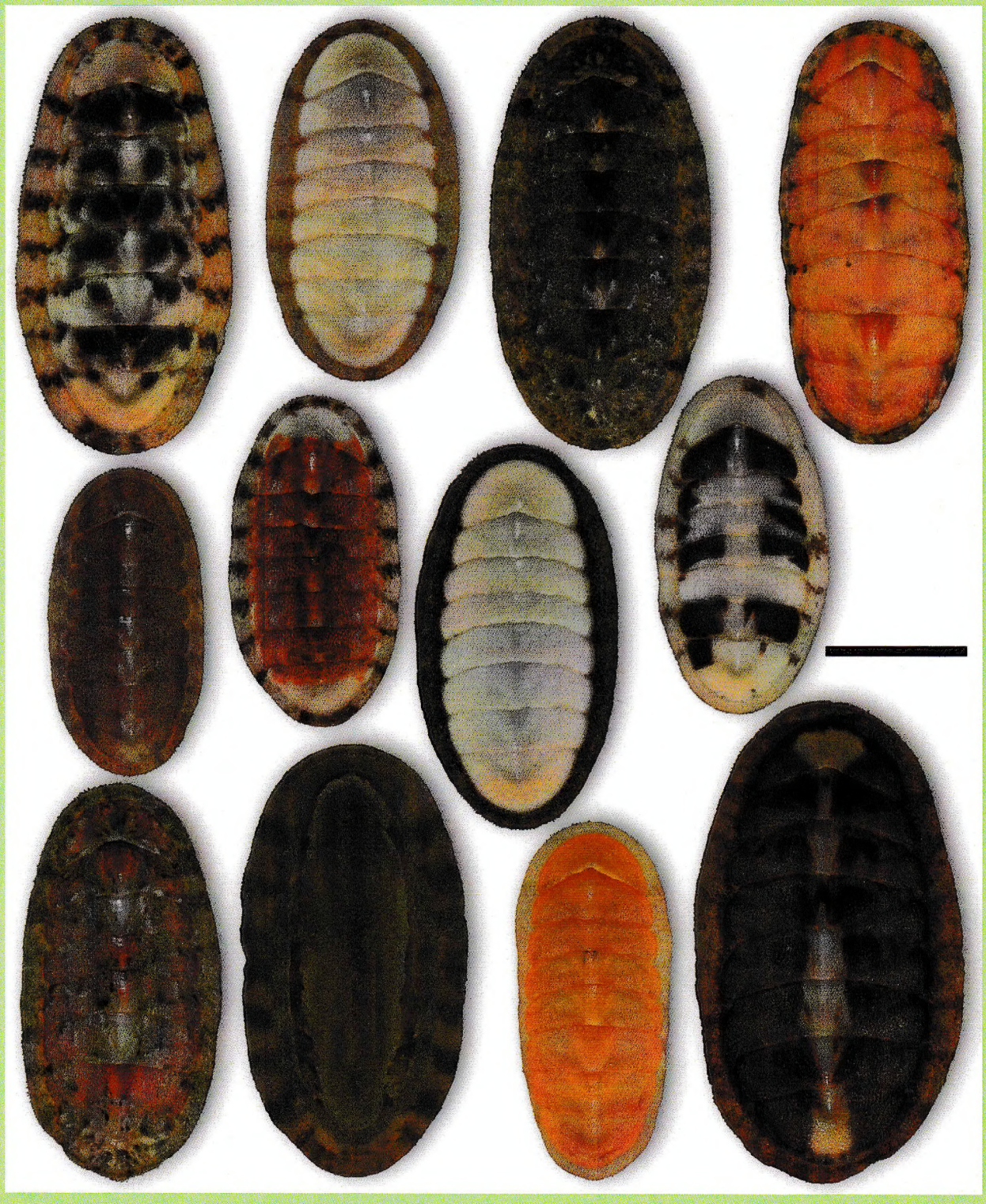
The editors strive to attain a high quality of publication and careful fact-checking. The scope of articles is intended to reflect the differing specialties, levels of interest and experience within the club. We hope all members will be able to contribute should they wish. We welcome both scientific and non-scientific articles, opinion pieces, photos, drawings and poems, and articles not directly related to shells or shell collecting so long as they have some relevance.

Contributions are welcomed. Editorial policies and formatting guidelines for anyone considering submitting articles for future editions are available on the website, or consult the editors. Photos or drawings provided should be of a high resolution, supplied as individual files and not embedded into text. Unless of an *in situ* individual, an assortment of specimens in one shot or an artful context, it is preferred that specimens are photographed at 90° to the height/length axis of the shell, with apertural views of gastropod species preferred. Multiple views, angles or images of the same specimen are appreciated.

Disclaimer: The views, opinions, statements, and text expressed in *Cookia* are those of the authors and may not necessarily be those of the Wellington Shell Club (WSC), its editors and publisher. The WSC assumes no liability for any content provided by our authors.

Logo: Cook's Turban Shell, *Cookia sulcata* (Lightfoot, 1786), from "An Encyclopaedia of New Zealand", edited by A. H. McLintock, originally published in 1966. Te Ara - the Encyclopedia of New Zealand.

http://www.TeAra.govt.nz/en/1966/27317/cooks-turban-shell-cookia-sulcata



One species one locality: *Ischnochiton sirenkoi* Dell'Angelo, Prelle, Sosso & Bonfillo, 2011. Collected from Lavanono, Madagascar. How would a selection of our *Ischnochiton maorianus* Iredale, 1914, stack up against these?

Image courtesy of Simon Aiken, York, England.

Back cover: "Above and Below Lyall Bay "

A3 coloured pencil on paper

Margaret Elliot